

January  
1958

Vol. XXIII, No. 1

# Western Industry

# 1958 Cost Reduction IDEA BOOK

Selected case histories  
that show you how to save  
time and money under Western  
plant operating conditions. In  
4 sections . . . . .

Material handling . . . . p. 35

Production equipment . . p. 43

Power & mechanical  
power transmission . . . . p. 57

Maintenance methods  
and plant services . . . . p. 63

**PLUS: WESTERN OUTLOOK** — special WI report of 1958 expectations  
to help you plan production and inventories . . . . . p. 13

60 FASTENER MANUALS — yours for the asking . . . . . p. 77



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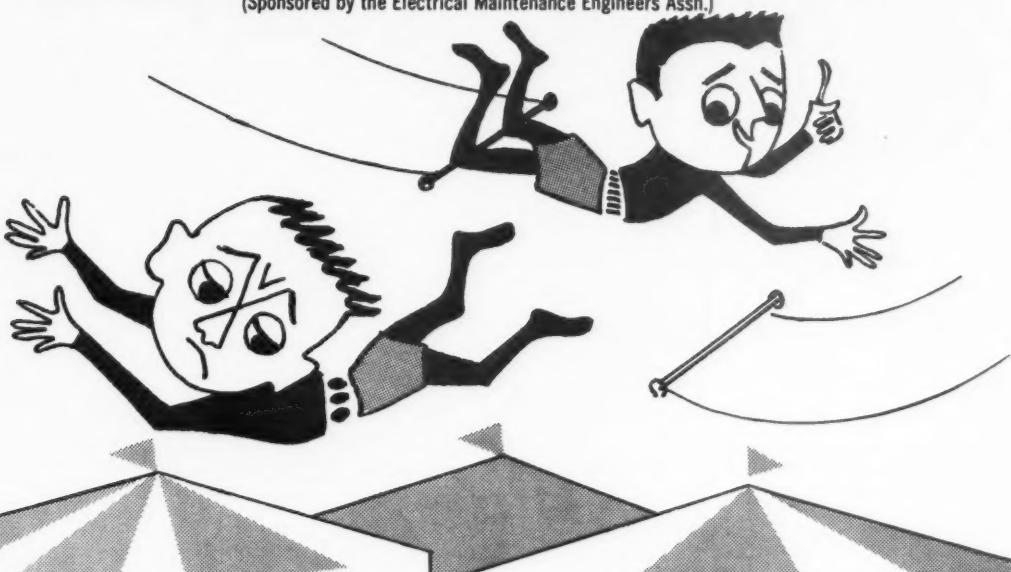
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JANUARY, 1958

Vol. XXIII, No. 1

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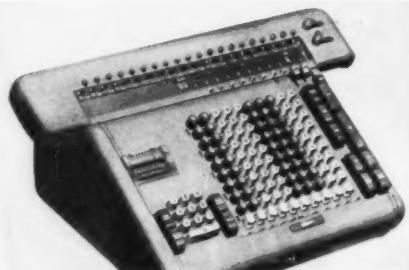
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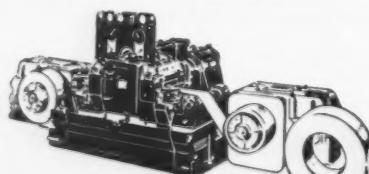
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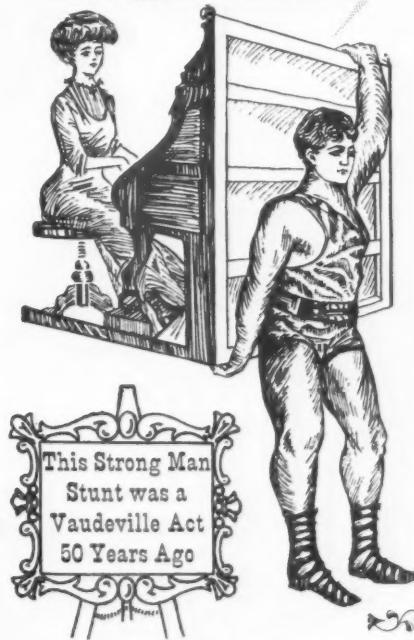
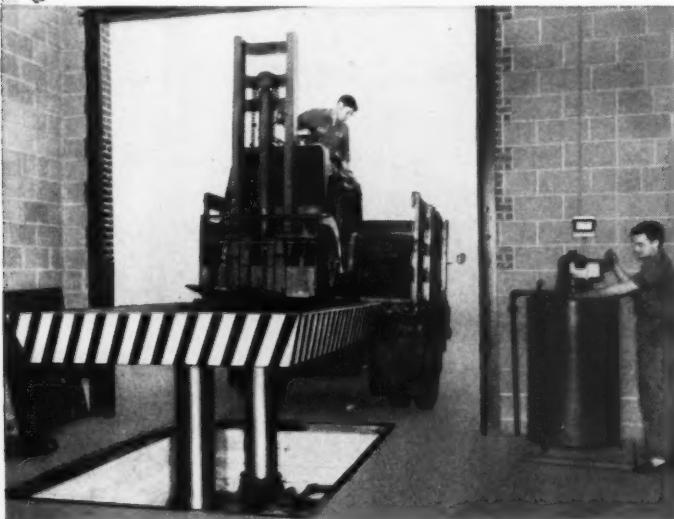
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WESTERN INDUSTRY — January 1958

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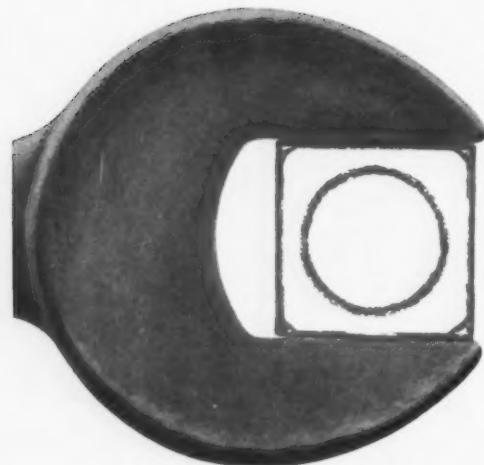
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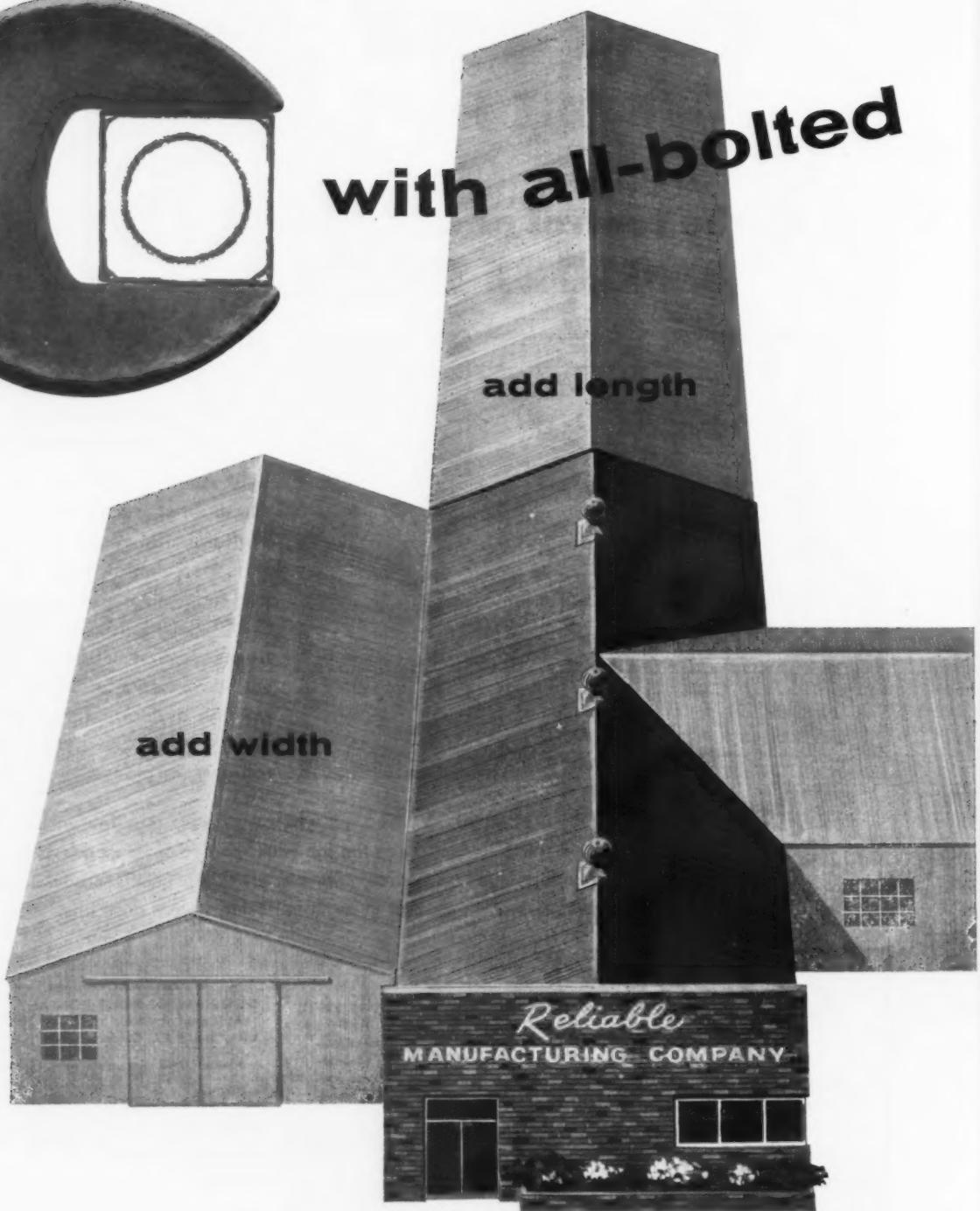
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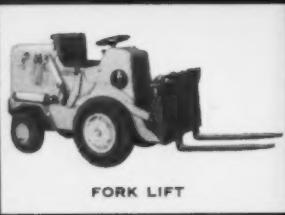


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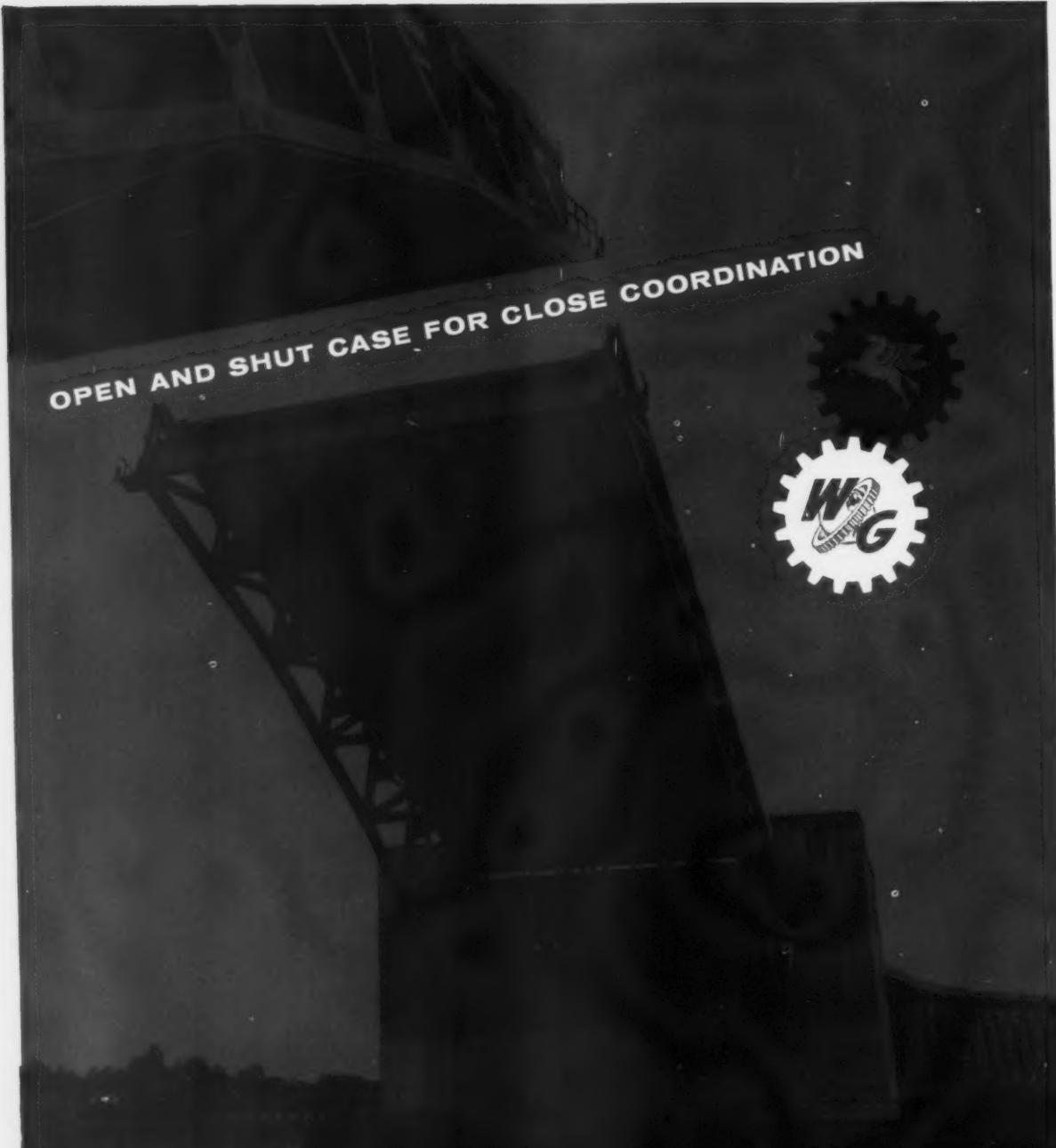
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OPEN AND SHUT CASE FOR CLOSE COORDINATION



There's a lot of coordination needed when a major project is in the building stage. Take Seattle's First Avenue South Bridge which covers 150 feet of water at a height of 53 feet. This important job was completed in 1956.

Western Gear Corporation supplied four "triple reduction right angle drives" to raise and lower the two bridge sections. For several years, General Petroleum has been supplying Western Gear with lubricants. From the very beginning...at the blueprint stage, G.P.'s

industrial engineers teamed up with Western's staff to develop the best possible lubricants for this "bascule double-leaf type" bridge.

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WESTERN INDUSTRY — January 1958

# Western Outlook-1958

**Despite slight drops in 1957, most industries in West look for fair increases this year—with electronics leading the way.**

By ARTHUR C. PRENDERGAST, Consulting Editor

**Western plant operators** are facing a year that will be more of a test for their skill, ingenuity and wisdom than ever before. With business slackening in many lines, and means to increase sales and profits not yet plainly visible, 1958 is a year of challenge.

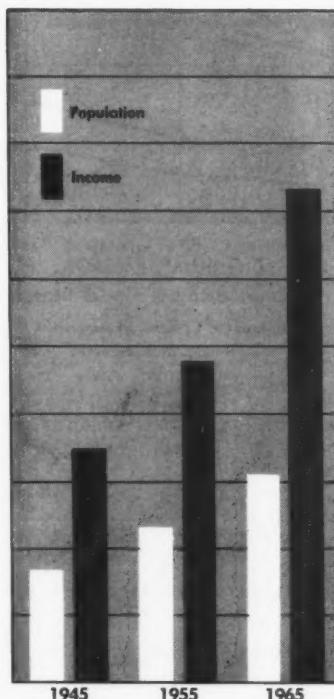
Nevertheless, industry in the West has met with a lot of challenges before and come up with some surprising answers.

Aircraft cutbacks make news now, but big missile jobs lie ahead as soon as they can be moved off the drawing boards. Revamping of defense programs promises tremendous activity in electronics.

Heavy engineering construction seldom flags, the federal highway programs may get into gear this year, and there are already signs of a good pick-up in the housing field. All of these will help lumber and plywood.

More steel, aluminum, copper and brass will be available, and the primary producers are likely to come up with new and highly practical ideas for utilization of these metals. It's well to remember the example of colored towels—even though you are only making nuts and bolts—which came into vogue during the depression and to everyone's surprise—immediately sold like hot cakes.

**Employment.** Manufacturing employment for the West for October 1957 (latest available figures) totaled 1,624,600, down 9,900 from preceding October, but non-agricultural total of 7,539,200 was 65,700 up. Prospective declines in aircraft may be offset by gains in lumber and other industries.



**THE WEST'S WEALTH GROWS FASTER THAN ITS POPULATION**

Chart above shows ratio of increase in personal income and population. Figures computed by Bank of America economics department from trends of per capita income and other sources. Population figures from U. S. Census Bureau.

#### Personal Income—11 Western States

(in millions of 1955 dollars)

1945	1955	1965
34,955	47,810	73,325

#### Population

(in thousands)

1945	1955	1965
16,957	23,139	30,151

**Aircraft.** Gradual shift of the West's largest manufacturing industry from military aircraft to missiles already has caused considerable employment decline, but 1958 starts with upwards of 300,000 employed, compared with 291,000 at beginning of 1956.

As the aircraft companies themselves are the leaders in missile production, and there has been a re-appraisal of the situation since *sputnik*, Western plants will play strong and vital role in development, testing and production.

Total backlog for production from West Coast plants (not including their midwest or eastern satellites) was over \$7 1/4 billion as of Sept. 30, 1957—equal to Jan. 1956 backlog. Plant area of 55 million square feet down about 8 million feet from peak, and less space as well as manpower required for missiles, which are less bulky. Dropped ceilings in the high-bay facilities and air-conditioned assembly space may result.

Government has eliminated overtime on military work, required primes to finance themselves to greater extent and stretched out many contracts. Pullbacks by primes from subs have increased and marginal subs have suffered. One group protests that it is at a competitive disadvantage against primes who use rent-free government-provided facilities.

Backlog of commercial aircraft, of which the West has the lion's share, over \$2 billion, highest in history.

Numerically controlled machine tools, outstanding technical development of the year, insuring greater reliability and eliminating discrepancies between prints and finished parts.

**Electronics.** This industry in the West, entwined so intricately with aircraft, missiles and military communications, is expected to feel a startling and challenging impetus from the re-casting of the nation's entire defense measures resulting from *sputnik*.

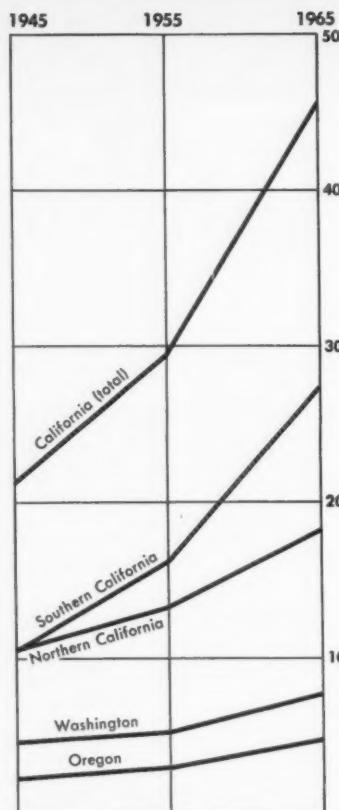
Within a few months an impressive step-up of research, development, design and production is looked for as new weapons and counter-weapons are envisioned, studied and worked on. Because engineering genius, rather than volume production know-how, has been the West's forte, the West foresees itself as a leading factor in the upcoming military programs. As the San Francisco Bay area has accented the scientific and research phases of electronics more than any other Western locality, the impact may be sharpest there.

While the most advanced methods and items will get the greatest emphasis, all phases of electronics are due to be affected, including the most conventional systems of communication, such as single side band transmission. Instrumentation is expected to be heavily affected by the forward surge.

Importance of the industry was demonstrated by the size of the Westcon Show held last August, requiring use of the San Francisco Cow Palace, scene of the 1956 Republican national convention, to house 765 exhibit booths and over 25,000 visitors.

The computer division is notably Western, because (1) both the Berkeley and Los Angeles campuses of the University of California and Caltech have been in the forefront of scientific development (Berkeley having actually developed a computer); (2) the aircraft industry's need for complex calculations has made it a prime customer; (3) climate permits year round delicate manufacturing and testing operations. General Electric has moved its computer headquarters from Syracuse to Phoenix. National Cash Register similarly is making Phoenix its computer headquarters, while IBM, Electro-Data (Burroughs Adding Machine) and Bendix have committed their manufacturing facilities to California. Norton Air Base at San Bernardino is being made computer headquarters for the Air Force.

**Oil.** Oversupply, which some companies say is only temporary, causes Government to extend import curtailment of 15% to West Coast. Stocks at near record high of 141 million barrels, with fuel oil at 30 million, compared to 14½ million a year ago. Other



#### BIG JUMP AHEAD Personal Income, Coast States

(Computed by Bank of America  
economics department)  
in millions of 1955 dollars

	1945	1955	1965
Washington ..	4,475	5,260	7,870
Oregon .....	2,440	3,100	4,930
Northern California ..	10,700	13,380	18,250
Southern California ..	10,600	16,200	27,600
Total, California ..	21,300	29,580	45,850

items not so bad. Over 20% of West Coast supply is foreign import.

Last year's drilling and production rate due to continue in 1958. California's 1957 output about 340 million barrels, and with help of expensive offshore drilling can be maintained for some years. But demand climbs—gasoline consumption in West grows 4% to 5% yearly—and new oil is harder to find, more costly to bring in.

Estimated that average West Coast refinery will approximately double its basic crude capacity by 1965, and will have to provide units for improving gasoline octanes, increasing yields of salable lighter ends and reduction of residual yields.

**Steel.** Western steel mills ran nearer capacity for first 10 months of 1957 than rest of the country, but Columbia-Geneva Steel Div. of U. S. Steel forecasts 8% decline Western steel consumption in 1958. 10% drop in shipments (partly due to working off inventory). Almost half of Western steel used for construction, as against less than 30% nationally, and outlook is as follows:

New plant construction, weak; commercial building, receding from 1957 peak; state and municipal, continued rise; federal, last half 1957 substantial decline from 1956, this lower level may continue; residential housing may increase 15% over 1957.

Containers, 17% of total Western steel use (national only 9%), about 10% up, drums, barrels, pails mild decline, but tin plate significant rise.

Durable goods manufacturing, slightly lower; machinery, substantial decline from 1957 record; electrical machinery, demand from utilities somewhat higher; railroads, new equipment and right of way maintenance, down as much as 25%; shipbuilding, slightly higher; material usage by aircraft industry and ordnance, substantial decline; oil and gas drilling, moderate advance from present slump; non-ferrous mining low level to continue; lumbering may be somewhat higher.

Forecast to 1960-1965 period: Western market cold rolled sheets almost double 1956, hot rolled bars up 60%, hot rolled sheets 50%, structural shapes and wide flange beams, 30% total increase over 35% in volume within next five or six years.

Kaiser's annual study indicates 1957 consumption seven Western states nearly 7,000,000 tons; 1956 6,840,000 tons, reflecting high level Western production (about 60% of total Western use) and unprecedented shipments from the East. Southern California constitutes 43% of market, Northern California 31%, Oregon and Washington 16%, Arizona, Utah, Idaho, Nevada, 10%.

Kaiser's doubling of Fontana mill capacity to be completed during 1958. Columbia-Geneva has acquired new ore deposit in Wyoming which will substantially improve its supply picture.

**Citrus Fruits.** For year ending Oct. 31, 1957, Sunkist Growers' fresh shipments totaled \$132,000,000, about 7% below preceding year. Exports now 15% of total. Products department sold \$38,000,000 additional.

**Shipbuilding.** Overcrowded Atlantic and Gulf shipyards make West Coast prospects look brighter than present volume of work, and facilities are being expanded, e.g.: Bethlehem, San Francisco, \$5 million program including drydock able to handle 900-ft. liners; Moore, Oakland, sectional drydock; Puget Sound Bridge and Dredging, Seattle, to permit guided missile vessel job for Navy; National Steel & Shipbuilding, San Diego; Todd at Seattle and San Pedro being readied to bid on new work, instead of merely repair, as at present.

Present jobs include: Bethlehem, San Francisco, two 32,500-ton tankers under construction, two more under contract, two destroyer escorts finishing up; cruiser Oklahoma being converted to guided missile ship; Mare Island Navy Yard, two nuclear submarines, one or more standard subs; S. F. Naval Shipyard, carrier to missile vessel; Pacific Coast Engineering, Alameda, tugs and barges; National Steel & Shipbuilding, San Diego, Standard Oil offshore drilling platform.

**Foundries.** Both ferrous and nonferrous foundries suffered sharp decline in volume latter half of 1957, as they are usually the first to feel the effects of business slow-down. If housing activity takes an upturn, foundries will benefit. Aluminum guard rail castings for highways may be a new source of business, as they have been used on 23 projects in the Pacific Northwest. Shell molding is dormant, but shell core-making has been fairly good, as has the carbon dioxide method. Ductile or nodular iron is gaining in acceptance. More use of gas in the Pacific Northwest would affect gas regulator business favorably.

Foundry consumption of brass ingots in the West in 1956 was approximately 15,000 tons, while nearly 18,000 tons of copper scrap were consumed, 5.5% and 13% respectively of national totals of each item.

**Aluminum.** Pacific Northwest aluminum reduction plants produced estimated total for 1957 of 580,000 tons, about 93% of 1956 output of 623,000 tons. Harvey Aluminum Co. plant at The Dalles, Oregon, capacity 54,000 tons, starts production this year. By end of 1958 Pacific Northwest will have dropped from 37% of national capacity to 29%.

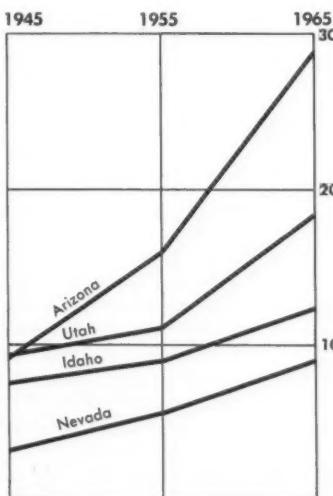
**Construction.** For all types of construction, first 11 months of 1957, F. W.

Dodge Corporation reports 1% drop from 1956 and non-residential was down 4%, residential down 2% and heavy engineering up 5%.

	(Thousands of dollars)		Increase or decrease
	1956	1957	
Non-resid.	2,068,887	1,982,423	-86,464
Resid.	2,654,716	1,606,827	-47,889
Heavy Engineering	1,862,316	1,954,562	+92,246
Highways (included in heavy eng.)	650,526	541,993	-8,633
Total	6,585,919	6,543,812	-12,107

**Plant expansion.** Announcements of new plants and expansions in California for 1957 about equal with five-year average of \$515,000,000 annually between 1951 and 1955 (1956 was over \$1 billion). Chambers of Commerce and other sources report inquiries from eastern corporations dwindling away to mere trickle.

**Dairy Products.** Uninterrupted increase in sales of ice cream and related products from 1951 to 1956 in California, Arizona and New Mexico, and trend apparently will continue. West's 1956 gain for '56 over '55 was 7.1%, compared to 4.18% national. Fluid milk sales increase with population. Trend in West is larger and fewer plants and fewer cows but total volume maintained because of greater production per cow.



#### REMARKABLE SHOWING Personal Income Projection

(Computed by Bank of America)  
in millions of 1955 dollars

	1945	1955	1965
Arizona	920	1,600	2,900
Utah	950	1,250	1,850
Idaho	770	900	1,250
Nevada	325	570	900

**Gas.** The Pacific Northwest's supply of natural gas from West Texas and New Mexico through the Pacific Northwest Pipeline Co. system was increased 250 million cubic feet daily late in the fall by completion of the West Coast Transmission Co. 650-mile, 30-in. pipeline from northern British Columbia. Throughput may be increased to 300 million by 1959.

Looking ahead to its needs in the next decade, Pacific Gas & Electric Co. takes preliminary steps toward a 1,300-mile 36-in. pipeline from the Peace River district of Alberta to deliver initially 400 million cubic feet per day. PG&E has organized a subsidiary, Alberta & Southern Gas Co., Ltd., which has contracted with Shell Oil Company and others for purchase of 80% of its needs. Export licenses from the Alberta and Dominion governments and import license from U. S. Federal Power Commission will be required prior to construction.

Industrial consumers are making big use of the new Northwest supply, and steam generated electric power plants are now much more feasible for the area than in the past. Availability of natural gas has enabled some big consumers to switch over from LP gas.

Approximately 200,000 customers gained by gas companies first nine months of 1957 in California, Arizona, Nevada, Utah. Gas range shipments into these four states, plus Oregon and Washington for same period 259,517, down 25,671 from 1956. Floor furnaces 9,857, down 4,451 from 1956. Unit heaters 12,172, up 29, gas fired incinerators 76, no previous figure.

**Canning.** Necessity of working off 1956 season carryover held 1957 fruit and vegetable packs down, but larger packs in prospect for 1958. Short 1957 tomato and tomato products pack due to weather. California utilizes over 60% of national canning tomato tonnage, packs one-third of total fruits and vegetables and half the fruits. Pacific Coast accounts for three-fourth of all canned fruits. Blend of grapefruit and pineapple juice going over big, nectar sales expand, particularly in export markets.

Freestone peaches becoming major pack, due to increased acreage and machine pitting. Popularity of torque type cling peach pitters brings out still newer equipment. Improved vertical screw presses squeeze out more juice from tomatoes.

New cling peach acreage coming into bearing will substantially increase available tonnage in next few years.

**Lumber.** Combined output of the regions covered by the West Coast Lumbermen's Assn., Western Pine Association and California Redwood Assn. for 1957 estimated at 16,565 million feet, down about 9% from the previous 5-year average. Outlook for 1958, about the same, or mild increase, say 6 to 10%.

Many small mills down, may not reopen due to log supply getting into stronger hands. Forest Service is upping allowable cut of federal timber which may increase supply and reduce price of federal timber.

Slackened housing demand is resulting in harder selling of wood for other uses. More Douglas fir being cut in Redwood region—10 months of 1957 fir was 24% of total cut as against 15% year before.

**Product trends:** Kiln capacity increasing, more dry lumber shipped; paneling increasingly shipped in cut-to-length packages; sheet-board, new paper-overlay sheathing panels, now in production by three mills, two more mills nearly ready for it; edged and glued-edged stocks increasing.

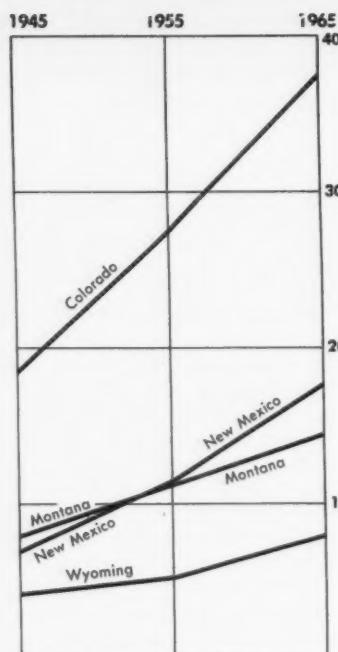
**Operating trends:** deck sprinkling superseding pond storage of logs; new types of log lifting machines; continued installation of chippers to turn leftovers into pulp chips and green veneer plants to turn logs into highest value products.

**Pulp, Paper and Board.** Pulp wood consumption, Pacific Coast including Alaska, 5,508,494 cords of 128 cu. ft. for first eight months of 1957, nearly 9% up from same period 1956. West's 1956 output paper and board, 3,631,746 tons, 11.5% of national; paper, 441,532 tons, 3% of national; paperboard, 1,565,997 tons, 10% of national.

Crown-Zellerbach's pioneering of moving wet pulp by ship to market area for processing into paperboard followed by installation of "pony" tissue mill in Los Angeles, 20-30 tons daily capacity, enabling closer adjustment of production to demand.

Pacific Coast shipments of fibre for 1956, practically all of it corrugated, were 12,043,900 M square feet, about 12% of national total. New fields the fibre box people hope to conquer are potatoes, grapes and melons (already having annexed citrus fruits and lettuce), also such liquids and semi-liquids as milk, cream, syrups, in polyethylene bags in corrugated containers.

Four new mills completed in 1957, one more due this year.



#### EASTERN TIER CLIMBS

#### Personal Income Projected

(Computed by Bank of America)

in millions of 1955 dollars

	1945	1955	1965
New Mexico	700	1,150	1,775
Montana	800	1,125	1,450
Wyoming	425	525	800
Colorado	1,850	2,750	3,750

**Plywood.** Production for 1957 about 5.4 billion feet, approximately 5% above 1956, sales about 7% up. Average increase in both production and sales last five years about 8% yearly. Douglas Fir Plywood Assn. estimated around 5.7 billion sales in 1958, in view of expected increases in dwelling and institutional construction and accelerated highway program.

Production capacity increased about 11% in 1957, and capacity by end of 1958 likely to be 7 billion feet. Nine new mills, either in operation or under construction. Primary trend is toward lower grades for construction, chiefly because cutting deeper into forests diminishes tree quality. Industry hopes by 1960 to revert to one glue line and eliminate cold press interior glue entirely. New methods for improving face of plywood as quality of log diminishes include grooving, striating, brushing, embossing and covering face with resin impregnated papers. Waste increasingly utilized for particle, pressed and soft boards.

**Electric energy.** Estimates of future demand for electric energy for the West require continued upward revision.

Here is the latest unofficial projection from Federal Power Commission reports:

Energy			
(in billions of kwh)			
Pacific Northwest	Pacific Southwest	Total West	
1960 . . . . .	74.3	72.7	147.0
1970 . . . . .	122.1	136.4	258.5
1980 . . . . .	179.7	222.8	402.5

Peak			
(millions of kw)			
Pacific Northwest	Pacific Southwest	Total West	
1960 . . . . .	12.5	12.8	25.3
1970 . . . . .	20.4	24.0	44.0
1980 . . . . .	30.2	39.1	69.3

**Chemicals.** Several new Western plants on the drawing boards, but no announcements yet. Ammonia capacity greatly increased by new facilities coming on stream last year. Largest expansion of the year U. S. Borax & Chemical Co.—\$20 million at Boron, Calif. Formaldehyde capacity jumps; chief use is resins for plywood. California fertilizer sales topped million tons in 1956, still going up.

Western oxygen supply increased by 35 million cubic feet monthly from Linde's expansion at Fontana, with further increase of 430 tons by mid-year 1958 and 115 million cubic feet more in 1959.

**Mining.** Low prices for lead, zinc and copper resulting from foreign competition have slowed down metal mining sharply. Uranium production from the Colorado Plateau has risen fast as new mills have been built, and mill capacity is estimated at 11,900 tons of natural uranium by end of 1958 and 16,000 tons by end of 1959.

**Frozen Foods.** Sharp cut-backs in packing of almost every kind resulted in 1957 from big carryovers from the previous season, but with inventories down to reasonable size 1958 may be another good year. Berries, for example, were down from 173,000,000 pounds in 1956 to probably less than 130,000,000 in 1957.

**Glass Containers.** Glass Container Manufacturers Institute reports 15,754,250 gross for coast as 1956 output as compared with 11,536,000 gross in 1951. Thatcher Glass Co., at Saugus, Calif., added one tank in 1957, Gallo Glass at Stockton, large flint tank and an amber tank under discussion.



## Louden handling is overhead handling at its very best

Overhead handling has many fundamental advantages which become evident when compared with any other type of materials handling. But the combination of Louden's long experience and wide range of equipment for overhead handling is frequently the key to turning these basic advantages to greatest account. A good example is the die storage facilities of the American Stamping Company at Cleveland, Ohio.

The American Stamping Company wanted to avoid the die storage problems of their old building, the crowded and cramped stacking of dies along walls and the space-wasting wide aisles required for trucking dies into storage. With Louden engineering and a Louden Stacker Crane, they found the perfect answer to their problem, *everything* they desired in a space only 40 feet square. The overhead fork lift, suspended from an underrunning crane, moves freely and maneuvers easily in narrow space-saving aisles and any of the stamping machine attendants can use it.

When you have a materials handling problem, call on Louden, the pioneer of overhead handling. Benefit by Louden's unequalled experience and broad array of service-proven equipment. Most Louden installations pay for themselves in months; some have done so in a matter of weeks. You can discuss your problem with a Louden field engineer without cost or obligation. Write or wire today.

# Louden

**MONORAIL & CRANES**

**THE LOUDEN MACHINERY COMPANY** • 8101 Superior, Fairfield, Iowa

*A Subsidiary of Mechanical Handling Systems Inc.*

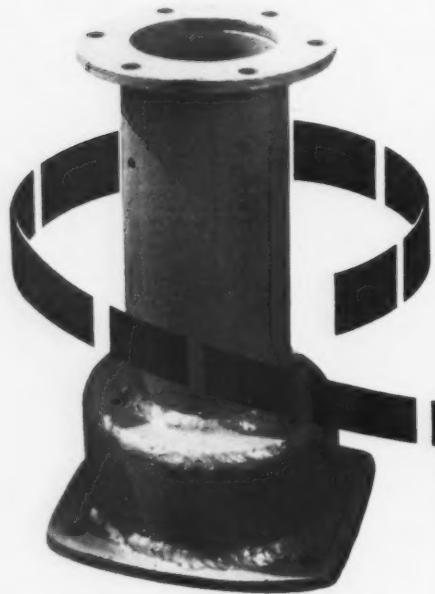
**SINCE 1867... THE FIRST NAME IN MATERIALS HANDLING**

*...for more details, circle No. 10 on Reader Service Postcard*

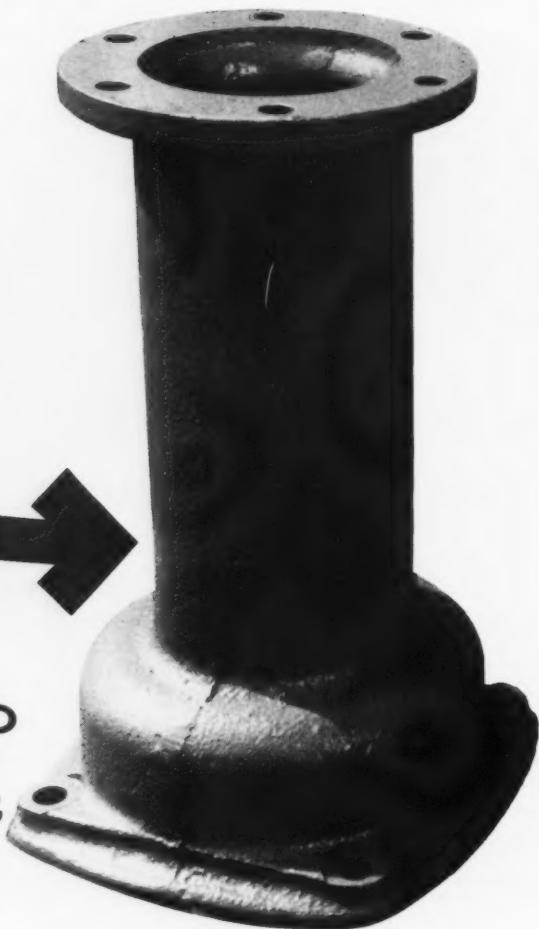
Get the latest information on the best in modern materials handling systems. Write today for your copy of "Economical Material Handling," a 52 page book full of how-to-do-it ideas. If you are interested in automation, ask for the new book on Louden Automatic Dispatch, "Automatic Materials Handling." With either you will receive the latest information on Louden Shok-Pruf Electrification, new safety in power for cranes and monorail systems.



from  
**5** pieces



to  
**1** part



by casting in steel...

from 2 tubing sections and 3 pieces of plate — to 1 part. Imagine the savings in throw-away metal when this housing for a farm implement axle was cast in steel. Casting in steel means flexibility in design, ease of replacement and duplication — customer, product and part number identification are added advantages. Perhaps casting in steel is the answer to your parts problem. If so, we offer almost 35 years' experience in this field. A consultation and estimate will cost you nothing. Why not call us? CUMBERLAND 3-2141



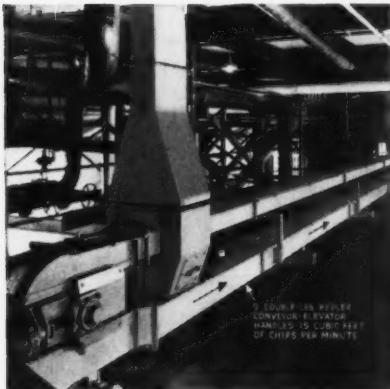
**KAY-BRUNNER STEEL PRODUCTS, INC.**  
999 SOUTH MERIDIAN AVENUE, ALHAMBRA, CALIFORNIA

... for more details, circle No. 11 on Reader Service Postcard  
**WESTERN INDUSTRY** — January 1958

# REDLER\*

## CONVEYORS-ELEVATORS

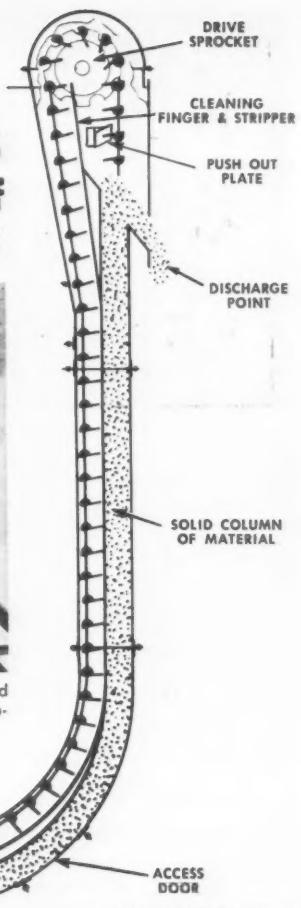
For safest, gentlest handling of your bulk materials... en masse!



Horizontal, double run REDLER Conveyor-Elevator handles 15 cubic feet per minute of resinous chips for a southern paper company.



Two inclined 17" REDLER Conveyors carry wood chips to six storage silos. Complete weather protection is afforded by steel casings.



DRAWING OF L-TYPE REDLER CONVEYOR-ELEVATOR

\*The REDLER Conveyor is an exclusive STEPHENS-ADAMSON product.

# STEPHEN'S-ADAMSON

THE BIG NAME IN BULK MATERIAL HANDLING EQUIPMENT

The REDLER Conveyor-Elevator is one of the most remarkable bulk materials handling machines ever built. It will move practically any pulverized, granular, small lump, or flaky material around corners, over vertical, inclined, or horizontal planes. Material moves forward in a compact column within a totally enclosed, dust-tight casing which virtually eliminates explosion hazards. Material is moved by means of closely spaced skeleton type flights linked together and moving through the casings. Material flows forward in a compact column. A very useful feature of the REDLER Conveyor is its ability to discharge material at multiple points. Arranged as a horizontal closed-circuit unit, the REDLER Conveyor will re-circulate materials and is often used in packaging or distributing operations.

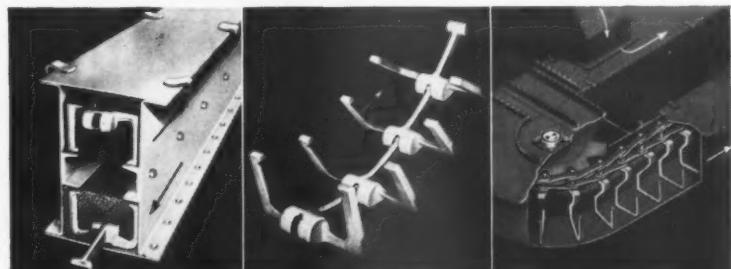
Compact REDLER Conveyor-Elevator designs are available in sizes to handle almost any tonnage. They are quickly and economically installed and their rigid box-girder-like casings are practically self-supporting. For complete data on REDLER Conveyors and Elevators, write for catalog 556.

S-A district or main plant offices can supply complete information on any conveyor product, or any phase of bulk material handling. Request a copy of REDLER catalog 556 for your file.



**MFG. CO.**

MAIN OFFICE AND PLANT  
85 RIDGEWAY AVENUE  
AURORA - ILLINOIS  
PLANTS LOCATED IN: LOS ANGELES, CALIF.  
CLARKSDALE, MISS. • BELLEVILLE, ONTARIO



Cross section thru the REDLER Conveyor casing shows material being conveyed in a lower run and the empty flights returning in upper run to complete the circuit. The casing is completely dust-tight, is largely self-supporting and requires very little space.

Exclusive, skeleton type flights linked together to move materials forward in a steady, non-agitated flow. REDLER flights readily curve around corners permitting horizontal and vertical movement of materials with one unit and one drive.

A 180° bend section of REDLER horizontal, closed-circuit conveyor. Sprocket drives side-pull style chain and flights around the bend. Ley bushed type driving chain is supported in a separate trough — no metal to metal contact in conveying chamber.

... for more details, circle No. 12 on Reader Service Postcard



## HOW'S YOUR ELECTRICAL MAINTENANCE KNOW-HOW?

Chances are a pointer or two has sprung up over the past year that can show you the way to **time** and **money** saving in your plant.

You can see and hear about these innovations at the **Fifth Electrical Maintenance Conference and Ninth Electrical Industry Show** on March 27, 28, 29 at the Shrine Exposition Hall in Los Angeles.

Ten topics are tentatively slated for the conference, and there will be hundreds of exhibits—displays by the blue book of the electrical industry.

Conference subjects will be presented consecutively during the daytime and will be repeated in the evening.

### Sessions on Thursday include:

9:10:30 a.m. and 7:9 p.m.—"Small Industry Looks at Maintenance of Electrical Equipment"—Chairman, **Frank Tharp**, Fluorescent & Floodlight Maintenance Co.

10:30-12 noon and 7:9 p.m.—"How to Estimate Additions and Expansions"—Chairman, **Charles H. Hays**, The Electrical Estimators, Inc.

2:30:30 and 7:9 p.m.—"Know Your Electrical Codes & Safety Orders"—Chairman, **King Christopher**, The Clark Controller Co.

3:30:5 and 7:9 p.m.—"Electronic Equipment Requires Maintenance"—Chairman **K. Lee Alvey**, AiResearch Mfg. Co.

7:9 p.m. "High Power Factor Can Pay Big Dividends"—Chairman, **William H. Warren, Jr.**, Southern California Edison Co.

### Sessions on Friday include:

9:10:30 a.m. and 7:9 p.m.—"Protective Devices Must Be Properly Selected and Maintained"—Chairman, **T. P. Regas**, Bulldog Electric Products of Los Angeles.

10:30-12 noon—"High Power Factor Can Pay Big Dividends"—Chairman, **William H. Warren, Jr.**, Southern California Edison Co.

1:2:30 p.m. and 7:9 p.m.—"Electrical Installations, Basic Concepts, and Proper Maintenance"—Chairman, **Kenneth T. Shaw**, Westinghouse Electric Corp.

2:30:4 and 7:9 p.m.—"Maintaining Proper Standards of Lighting Will Assure Peak Production"—Chairman, **Urban Beh**, Consulting Electrical Engineer.

7:9 p.m. "Large Industry Plans Maintenance to Reduce Breakdown Losses"—Chairman, **W. E. Cline**, General Electric Co.

7:9 p.m. "Commercial Buildings Look at Maintenance of Electrical Equipment"—Chairman, **Edmund Lanski**, ITE Circuit Breaker Co.

### Saturday sessions include:

9:10:30 a.m.—"Large Industry Plans Maintenance to Reduce Breakdown Losses"

10:30 a.m.-12 noon—"Commercial Buildings Look at Maintenance of Electrical Equipment."

**Paul H. Henrichs**, So. California Edison Co. is chairman of the conference programs. Further conference information may be obtained by calling the EMEA, MUTual 1734 or by writing to Mr. Henrichs.

Exhibit information may be obtained from Fred Tabery, exhibit manager, 3443 So. Hill St., Los Angeles.

**THE SOUTHERN CALIFORNIA SECTION**, American Society of Mechanical Engineers, has organized a local division of the National Headquarter's newly-formed Maintenance and Plant Engineering Group.

**William R. Gould**, superintendent of steam generation, Southern California Edison Co., was named director of the local division. Assistant director is **Charles G. Brent**, project engineer, Fluor Corp., Ltd.

**THE CHAMP**—Terry Bosacchi, of American Brass and Iron Foundry, is congratulated by **Mike Ginty**, of Vulcan Foundry, for winning the low gross prize at a recent American Foundrymen's Society golf tournament. Standing by is **Vince Monte Verda**, golf chairman.



## WESTERN MEETINGS YOU SHOULD PLAN TO ATTEND

**THE THIRD INDUSTRIAL MATERIALS HANDLING AND PACKAGING CONFERENCE** has been scheduled for April 4 and 5 on the campus of the University of California, Berkeley, announced a steering committee composed of the sponsoring groups—the San Francisco Bay Area chapters of the Society of Industrial Packaging and Materials Handling Engineers (SIPMHE) and the American Material Handling Society (AMHS).

It will follow closely the conferences held in 1956 in San Francisco and at Stanford University in 1957. There will be two general packaging and material handling sessions each day, followed immediately by panel discussions in smaller groups, each under the leadership of a moderator.

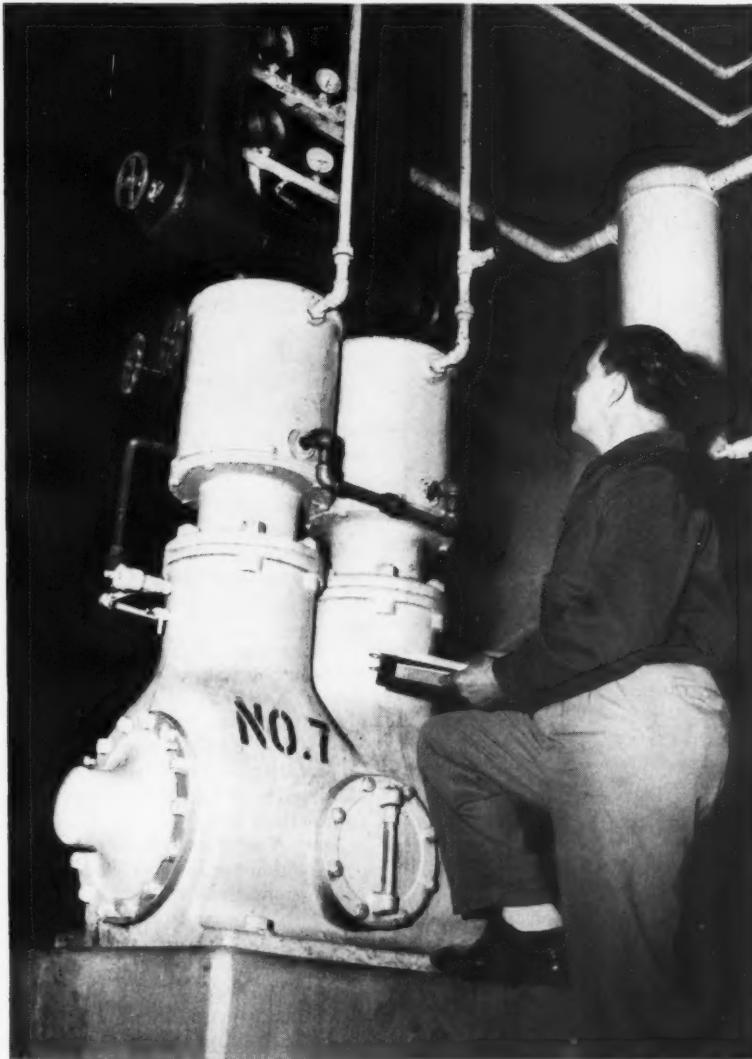
Panel groups will explore specific problems suggested by remarks of the general session speakers. Based on last year's attendance, more than 300 delegates embracing the fields of industrial packaging and material handling, and allied transportation industries, are expected to attend.

Announcement of general program speakers will be made later by the steering committee chairman and invitations to participate as delegates will be mailed well in advance of the conference dates.

Permanent steering committee

... continued on page 22

# Compressor in service 10 years without repairs



**This 40-ton Cyclops Ammonia Compressor** is still operating efficiently after more than 10 years' continuous service using Chevron Multi-Machine Oil ICH (formerly Calol). Maintenance superintendent Joe Kovacevich, who is reading head and back pressure gauges (above), reports compressor has not required any repairs during this entire time.

**Chevron Multi-Machine Oil ICH** is also used in winery's 12 other compressors. These refrigerate wine to accelerate aging and solidify impurities to permit filtering. Valves in compressors occasionally need grinding or replacement, but lower assemblies average 7 to 8 years of almost continuous service before needing repairs of any kind, reports Mr. Kovacevich.

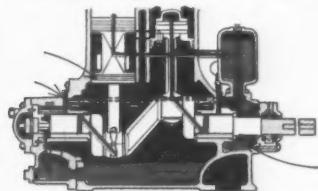


TRADEMARK "CHEVRON" AND CHEVRON DESIGN REG. U.S. PAT. OFF.  
**STANDARD OIL COMPANY OF CALIFORNIA**  
...for more details, circle No. 13 on Reader Service Postcard



**Blower Units** keep oak casks at 45 F to hasten aging of wine. Compressor using Chevron Multi-Machine Oil ICH (described at left) serves three of these Niagara blowers.

**Why Chevron Multi-Machine Oil ICH reduces maintenance on bearings, pumps and compressors**



- Resists formation of deposits; has extremely low pour point
- Metal-wetting ability keeps oil on bearings under heaviest loads
- Separates rapidly from water and contaminants
- Assures efficient seal of stuffing box glands

**For More Information** on this product or a copy of the new free catalog: "A Lubricant Reference Guide to Economical Equipment Operation," call your Standard Engineer or Representative, or write 225 Bush St., San Francisco 20, California.

Expanding Philippine Industry  
Depends on Hill  
to Supply Special  
Type Transformers

**FROM  
ORDER TO  
SHIPPING  
DOCK IN  
29 DAYS**



Special Voltage Auto Transformers for  
Cebu, P. I., nearing completion. Type:  
4000 KVA, Single Phase, OISC, 3810/  
6600Y to 1990/3450Y with tertiary  
windings for harmonic suppression.

Atlas Consolidated, Cebu, Philippine Islands, needed three 4000 KVA power auto transformers—special voltage—to meet new plant facilities already under construction. Order specified shipment must be made in 33 days.

On the 29th day from date of order, delivery was made to the dock for shipment to Cebu. Manufactured in strict accordance with NEMA specifications, transformers were inspected and approved by R. W. Hunt Co., professional inspectors for overseas shipments.

These exacting customer requirements—prompt delivery, special designs, manufactured to NEMA and ASA standards—are all part of the sale when you specify Hill Transformers.

**OIL FILLED • ASKAREL  
DRY TYPES  
through 5000 KVA**

**Hill Transformer Co., Inc.**  
1030 Washington Street  
San Carlos, California



... for more details, circle No. 14 on Reader Service Postcard

**WESTERN  
MEETINGS**

continued from  
page 20

members named include **Robert C. Swendsen**, AMHS, Chairman; **Stuart Langdon**, SIPMHE, Secretary; **Lew Gardner**, AMHS, Treasurer; **E. Gordon Covington**, SIPMHE, Publicity; and **Robert Morris**, SIPMHE; **Clyde Jacobs**, AMHS; **G. Paul Heppes**, SIPMHE; **Al Hamre**, AMHS; **Grover Hoskins**, SIPMHE, and **John L. Sullivan**, AMHS.

**SPACE TECHNOLOGY** will be the subject of a series of California state-wide lectures presented by the Departments of Engineering and Physical Sciences, University Extension, University of California, in cooperation with the Ramo-Wooldridge Corp.

The series aims to provide a sound yet imaginative exposition of fundamental principles of very long range ballistic vehicles, stressing those quantitative laws which are uniquely related to space flight.

Lecturers include many laboratory directors, academic departmental heads and men with major responsibilities in the American satellite project.

Places and dates for the lecture series to begin:

**Los Angeles**—Mondays, 7 p.m. beginning Jan. 13 at Room 100, Moore Hall, L. A. Campus.

**San Diego**—Tuesdays, 7 p.m. beginning Jan. 14 at Auditorium, Dana Junior High School.

**San Francisco**—Wednesday, 7 p.m. beginning Jan. 15 at Morrison Auditorium, Golden Gate Park.

Registration fee is \$35. Further information can be obtained from extension offices of the University of California.

**1958**

**Feb. 6-7—GOVERNOR'S INDUSTRIAL SAFETY CONFERENCE**, eighth annual California state-wide meeting, Fairmont Hotel, **San Francisco**. Further information may be obtained from H. A. Hartman, staff consultant, manufacturing section, 965 Mission Street, San Francisco, Calif.

**March 17-21—NATIONAL ASSOCIATION OF CORROSION ENGINEERS**, 14th annual conference, **San Francisco**. Contact A. B. Campbell, executive secretary, 1061 M & M Building, Houston 2, Texas.

**March 27-29—ELECTRICAL MAINTENANCE CONFERENCE**, combined show and conference, at the Shrine Exposition Hall, **Los Angeles**. Emphasis on automation and electronics. For further information contact Fred J. Tabery, 3443 So. Hill Street, Los Angeles.

## Concrete Plant Owner

# Saves 14 $\frac{2}{3}$ Hours Per Day

with John Bean AQUABLAST!



610 MCKENDRIE STREET  
SAN JOSE 11, CALIFORNIA

John Bean Division  
Food Machinery and Chemical Corporation  
San Jose, California

Dear Mr. Mors:

When I buy a product which exceeds my expectations, I think the manufacturer ought to know about it. I am referring to the John Bean Aquablast Washer (Model 35W) which we purchased to solve the difficult problem of cleaning our transit-mix trucks.

The job was previously done by the individual drivers, using city water pressure, requiring some 45 minutes per truck. The necessary hammering to remove caked concrete roughened the finish, making the next cleaning more difficult.

By using your equipment, our time was reduced from 45 to 5 minutes per truck! One operator now washes all the trucks daily, including 22 transit-mix trucks. The 600 pounds pressure gets into the corners and really takes off the concrete, grease and dirt, doesn't damage the finish, and, best of all, saves us 40 minutes per truck.

Very truly yours  
CENTRAL CONCRETE SUPPLY CO. INC

C. P. Albanese, President

We can't add much to the enthusiasm shown by Mr. Albanese in his letter. Translated into dollars, the time saved paid for the equipment during the first three months of operation.

However, this difficult cleaning problem is only one of the many practical applications for a John Bean Aquablast. You may be ignoring a similar money-saving opportunity. Check the coupon and let us study your problem.



Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL  
CORPORATION

**John Bean Division**

San Jose 1, California

Lansing 4, Michigan



Aquablast operator cleaning one of the 22 trucks at Central Concrete Supply Co.

*John*  
**BEAN**  
**AQUABLAST**



MODEL 35 W

Shown at right.

Send coupon today for more information.

JOHN BEAN DIVISION, Dept. WI-1  
FOOD MACHINERY & CHEMICAL CORP.  
San Jose, California • Lansing, Michigan

Gentlemen: I am interested in solving the following problem with the John Bean Industrial Pumps. Please send me your catalog and other material on this equipment.

Water transfer    Washing operation    Core drilling  
 Plant clean-up    Hydro-static testing    Other  
 Hydraulic press operation

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

... for more details, circle No. 15 on Reader Service Postcard

# NEW LIQUID OXYGEN, NITROGEN, ARGON PLANT TO SERVE LOS ANGELES AREA

**Air Reduction Pacific starts  
production in one of the largest  
commercial air liquefaction plants  
west of the Rockies**

At peak capacity, 55 tons of oxygen, 15 tons of nitrogen and 3½ tons of argon will flow daily from Airco's new air liquefaction plant at City of Industry (formerly La Puente), California, 20 miles east of Los Angeles. The opening of these facilities makes Air Reduction Pacific Company one of the leading commercial producers of liquefied gases on the Coast.

#### **HIGH PURITY, DRY ATMOSPHERIC GASES AND LIQUIDS ALWAYS ON TAP**

From this new modern facility, you are offered prompt deliveries of the highest quality gases. This is accomplished by the highly refined processing equipment and effective quality control. Trained Airco technicians, using precision instrumentation of advanced design, control the entire production cycle.

#### **BULK LIQUID DELIVERY SERVICE**

Deliveries of the oxygen, nitrogen and argon in



liquid form are made in special tank cars or tank trucks to storage facilities and conversion equipment for supply of these products in gaseous form to your in-plant pipeline system.

#### **TECHNICAL ASSISTANCE AVAILABLE**

Airco also offers you the assistance of Technical Specialists who will help you to determine the equipment you need for the most efficient use and handling of the gases in both liquid and gaseous form. If your process or products call for the use of oxygen, nitrogen or argon, contact your nearest Air Reduction Pacific Sales Office for complete information.



**AIR REDUCTION  
PACIFIC COMPANY**

SAN FRANCISCO • LOS ANGELES • PORTLAND • SEATTLE  
Bakersfield • Burbank • Emeryville • Fresno • Inglewood  
Sacramento • San Diego • Stockton • Tacoma

Western Headquarters for  
Oxygen, Acetylene and Other  
Gases . . . Carbide . . . Gas Welding  
and Cutting Machines,  
Apparatus and Supplies . . . Arc  
Welders, Electrodes and Accessories

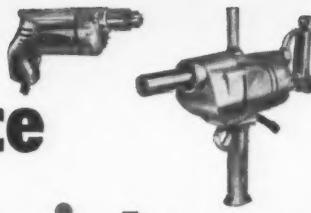
Air Reduction Pacific Company is a division of Air Reduction Company, Incorporated. Principal products of other divisions include: PURECO — carbon dioxide — gaseous, liquid, solid ("DRY-ICE") • OHIO — medical gases and hospital equipment • NATIONAL CARBIDE — pipeline acetylene and calcium carbide • AIRCO — acetylenic chemicals • COLTON — polyvinyl-acetates, — alcohols, and other synthetic resins.

... for more details, circle No. 16 on Reader Service Postcard

WESTERN INDUSTRY — January 1958

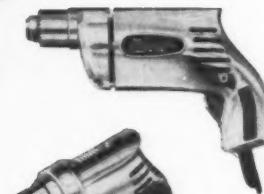
# Industry's No. 1 choice

## For production and maintenance



A Type and Size for Every Kind of Job

Capacities . . .  $1/4"$  to  $1"$   
 $1/4$  to  $1\frac{1}{2}$  Horse Power



There is a MILWAUKEE drill for every drilling job. Each is engineered and built for but one purpose . . . heavy duty production use. The powerful motors in these drills are completely manufactured in MILWAUKEE'S own plant . . . designed and built specifically for the tool they power and the job they're to do.

MILWAUKEE has built motors for heavy duty electric tool service for more than 30 years. This long experience and motor building "know-how" is reflected in dependable stall-proof power, best performance and longer life, so characteristic of all MILWAUKEE tools. Stop in at, or call your nearest MILWAUKEE tool distributor for a convincing demonstration. Let him prove to you why MILWAUKEE has become the *preferred* drill in industry.

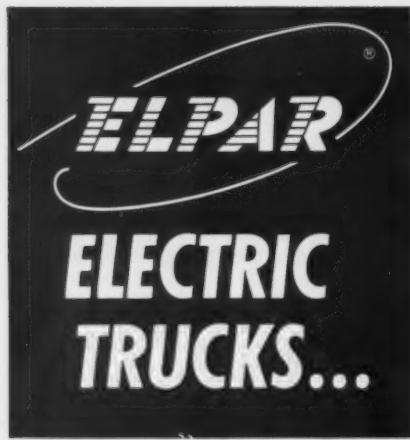
Write for Bulletin D-16.

MORE POWER  
PER DOLLAR



Milwaukee Electric Tool Corporation

Los Angeles, 2569 W. Olympic Blvd.  
San Francisco, 1552 Howard St.



New ELPAR R-10 series fork truck.

## Twice the Life . . . $\frac{1}{3}$ rd the Operating Costs

In buying power industrial trucks, look beyond initial costs—and you'll discover these overwhelming advantages of ELPAR electric trucks:

- ELPAR electric trucks last at least twice as long as gas trucks operating under comparable conditions. Thus, when *all* initial and replacement costs are added up, ELPAR trucks actually *cost less to buy*.
- ELPAR truck operating and maintenance costs are only one-third those of comparable gas models. Based on 2,000 hours of operation, this means an average saving in direct operating costs of over \$1,200 per truck per year.

These facts are based upon actual case studies from a number of plants. They explain why 75 of the 100 largest U. S. corporations now are using ELPAR trucks . . . and why more and more companies are converting their fleets to ELPAR electrics.

Learn how ELPAR trucks can make short work of your toughest materials handling problems—with an almost unbelievably high bonus of savings . . .

### SEND FOR YOUR COPY

of the ELPAR *Lift*, "Gas vs. Electric Trucks."



ELWELL-PARKER ELECTRIC CO. WESTERN REPRESENTATIVES:  
 Los Angeles . . . J. W. LAFFERTY CO., 5422 E. Washington Blvd.  
 San Francisco . . . IRA G. PERIN CO., 575 Howard St.  
 Seattle . . . COLBY STEEL & MFG. INC., 3155 Elliott Ave.

## Twice the Life . . . $\frac{1}{3}$ rd the Operating Costs

... for more details, circle No. 18 on Reader Service Postcard

WESTERN INDUSTRY — January 1958

... for more details, adv. opp. pg., circle No. 19 on Reader Service Postcard ➤

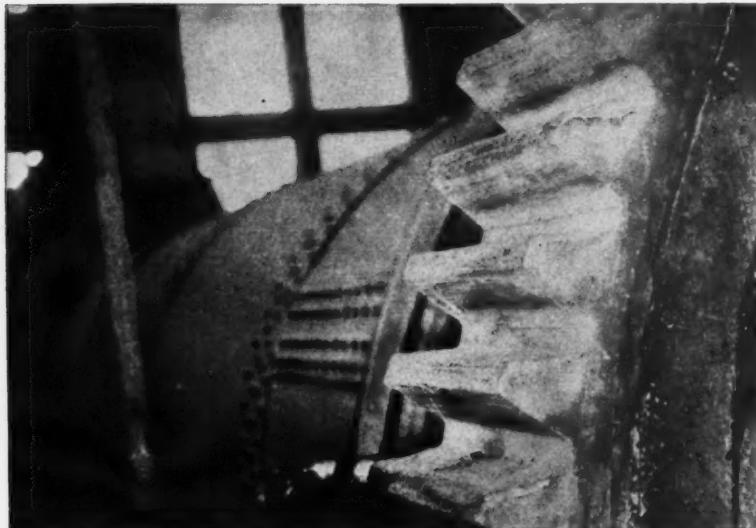


# EUTECTIC

## Welding News

PUBLISHED BY EUTECTIC WELDING ALLOYS CORPORATION, 40-40 172 STREET, FLUSHING 58, NEW YORK, N. Y.

### "EUTECTIC" CAPS CAST IRON TEETH TO PREVENT COSTLY CAVITIES



(Each tooth required 2 1/2 pounds of alloy for overlaying; each is a foot long. Job was further complicated by sticky coat of grease over the entire gear.)

Hard use of this huge gear meant extreme wear of its foot-long teeth. The result...frequent breakdowns, and finally, complete stoppage.

The gear—part of a large rotating oven in a Northwest aluminum mill—could not be replaced for several months. Concerned over this expensive shutdown, management turned to their local "Eutectic" Technical Representative for a solution.

After inspecting the gear, Eutectic's Technical Representative recommended overlaying the worn teeth with EutecRod 185 FC...a Eutectic

#### "Low Temperature Welding Alloy"® for torch use.

All 115 gear teeth were overlayed, and the gear was put back in operation. After six months of continuous operation, the overlays have proven unusually wear resistant. Breakdowns have ended...the gear functions with complete dependability. Originally thought of as a stop-gap measure, this "Eutectic" overlaying procedure is now standard. The company also has cancelled its order for a new...and very costly...gear.

#### TECHNICAL DATA

EutecRod 185 FC is a flux coated alloy of BronzoChrom. Its extremely hard and tough deposits—high ductility and low friction coefficient—makes it perfect for build-ups and overlays on cast iron. Hardness as deposited is BHN 110, with a work hardness to BHN 200.

EutecRod 185 FC doesn't require fusion

of the base metal surface. This permits the very lowest base heats. High heat embrittlement, warping and distortion are eliminated...a big advantage when working with cast iron. For complete technical information about EutecRod 185 FC write to Eutectic's Technical Information Department.

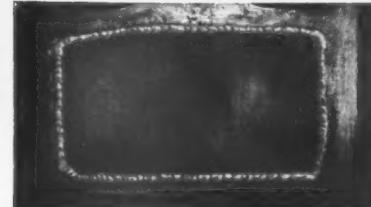
#### 2970 Lb. CYLINDER SAVED

**Cylinder Is 7 1/2 Ft. High, 42 In. Diameter**  
A permanent overload on a 3,000 hp engine caused cracks in cylinder wall. Replacement would cost the owner—an Eastern power plant—\$3,100.

After consulting with local "Eutectic" Technical Representative, it was decided to chamfer cracks with Eutec Chamfer-Trode (DC Straight). Its special eothermic coating concentrates arc and blasts away unwanted metal...no finishing operation is needed.

Welding was done with Xyron 2-25 (AC-DC). This "Frigid Arc" coated alloy produces a high nickel alloy especially balanced to produce dense, smooth, crack-free, machinable deposits without preheat. Ultimate tensile strength is 56,000 psi. After two years in operation, cylinder still operates perfectly—continued excellent service is expected.

#### TO REPAIR A CRACKED MARINE ENGINE...



...a cast iron plate had to be welded to the outside of the cylinder block. Eutectic's Xyron 2-24 (AC-DC) was used. This alloy's ultimate tensile strength of 50,000 psi permitted the welded plate to withstand pressures of 3 atmospheres.

Xyron 2-24 (AC-DC) has a special core metal with "Frigid Arc" flux coating for application ease. Enables rapid work in difficult, awkward position, since spatter is reduced to a minimum and alloy deposits smoothly and easily.



**Eutectic Warehouse—Service Centers**  
1108 Blake Street, Berkeley 2, Calif.  
5348 Jillson Street, Los Angeles 22, Calif.  
1414 South Street, Phoenix, Arizona

**Eutectic Welding Alloys Corporation**  
40-40 172nd Street, Flushing 58, N.Y.

#### NEW 1958 180 PAGE POCKET WELDING DATA BOOK

Complete guide to modern welding techniques

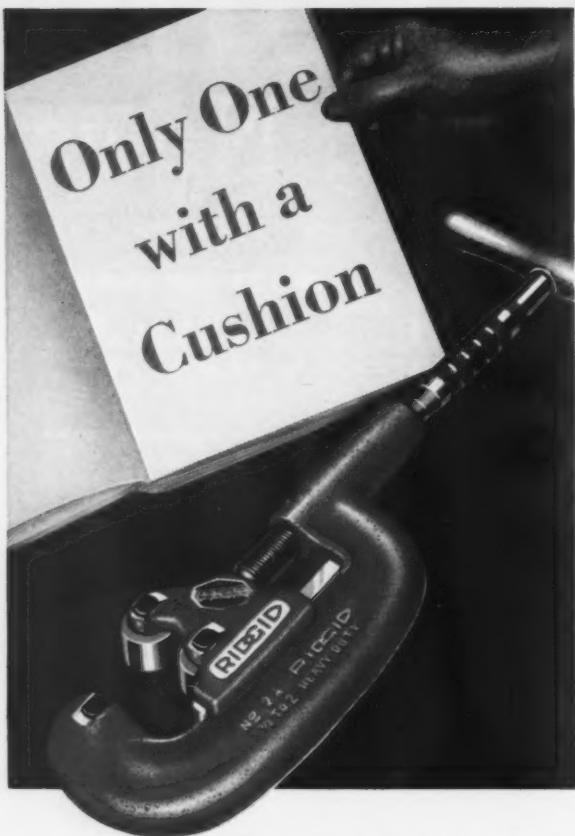
Name \_\_\_\_\_

Business Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

**EUTECTIC WAREHOUSE—SERVICE CENTERS • 1108 BLAKE STREET, BERKELEY 2, CALIF.**  
**5348 JILLSON ST., LOS ANGELES 22, CALIF. • 1414 SOUTH ST., PHOENIX, ARIZONA**

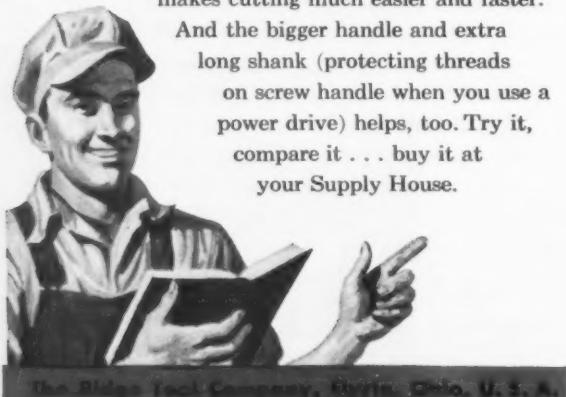
"EUTECTIC" WELDING HEADLINES • TIME - MONEY - MACHINERY SAVERS



**So you get easier  
quicker action with**

*New*  
**RIDGID**  
**Heavy-Duty Pipe Cutters**

The instant you start feeding in this new cutter on a pipe you feel the remarkable difference, the new cushioning effect that makes cutting much easier and faster. And the bigger handle and extra long shank (protecting threads on screw handle when you use a power drive) helps, too. Try it, compare it . . . buy it at your Supply House.



... for more details, circle No. 20 on Reader Service Postcard

## LABOR NOTES for the WEST

**WORKING MEN ENJOY A RICH MAN'S** week end at Longren Aircraft Co., Inc. Yes, the firm provides for 12 long weekends, or 30 days of relaxation for which employees can plan ahead.

**A system was worked out** by Ernie Roach, assistant superintendent of Plant 1, that goes like this: Employees do not report to work the first Monday of each month, but work the following Saturday instead.

**Result**—Longren people will have eight three-day weekends; and four four-day weekends, by combining legal holidays with long weekends.

**NOISE** may be causing one of the biggest headaches in your plant, a noted expert on occupational diseases told the West Coast Noise Conference, meeting in Pasadena.

Fred W. Braun, vice president, Employers Mutuals of Wausau, Wis., went on to suggest these steps as a solution to noise in industry.

1. A noise level survey.
2. Analysis of each machine and location, pinpointing where the noise comes from and the correct decibel count of each machine involved.
3. Appointment of a specialist, to study the problem, who is directly responsible to management.
4. Use of outside consultants.
5. Check new equipment and maintain old equipment properly.
6. Substitute quieter operations where possible, such as the use of arc or flame welding instead of riveting.
7. Each employee must be his own "noise governor."
8. Use of protective devices for the ears. Braun said that the average ear protection reduces noise from 25 to 35 decibels.

**A BRIDLE** has been slipped on possible inflationary price hikes for new homes by the Southern California Association of Cabinet Manufacturers with the adoption of a uniform form contract, the first ever subscribed to by the 130-member cabinet manufacturing and installing subcontractor group.

Association President **H. C. McConnell** said in part: ". . . We have carefully researched our manufacturing processes and have pooled our knowledge with others in this field so that we may produce our work as efficiently and economically as possible. The results of our efforts along these lines are passed along to builders so that we may contribute our share in an effort to avoid inflationary price increases . . ."

**"IT TAKES MONEY TO EARN MONEY"** is an adage that the Utah Copper Division of Kennecott Copper Corp. believes in firmly.

During 1957 the company **spent** a total of \$11,646,929 to **reduce** costs. The company is convinced that it will **save** money in the long run from these expenditures: \$3,600,000 for a new tunnel; \$4,530,000 for contract stripping operations; \$225,000 for an experimental rod mill; \$200,000 for a 75,000 kw. turbine generator; \$325,000 for pumping and distribution, and \$130,000 for additional pressure conduit for a cooling system.

Yes! . . . it's **ALL STEEL**



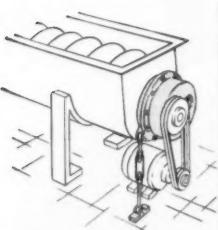
**HP RANGE:**  
½ to 50 hp

**RATIOS:**  
4:1—14:1—24:1 (or 20:1)

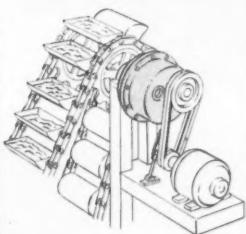
**OUTPUT SPEED RANGE:**  
420 to 5 rpm

**TORQUE RATINGS:**  
up to 31,500 lb-in

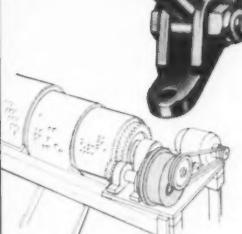
#### A FEW TYPICAL APPLICATIONS



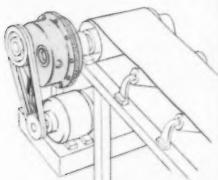
SCREW CONVEYOR



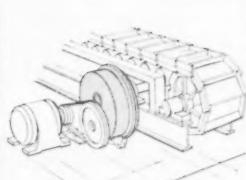
BUCKET ELEVATOR



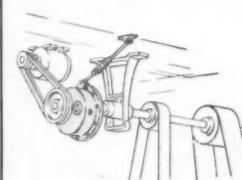
GRAVEL CLASSIFIER



BELT CONVEYOR



APRON FEEDER



LINE SHAFTING

## FALK ALL STEEL Shaft Mounted Drive

...Steel can "take it"!

**STEEL** frame ... of fabricated plate supports all rotating elements—provides double the ability of iron to maintain vital alignment of revolving elements, even under shock load or external impact.

**STEEL** housing ... will not fracture, serves only as protective cover and lubricant reservoir. Therefore, lubricant supply is safeguarded.

**STEEL** tie-rod and straddle-mounted tie rod brackets... are fastened to heavy steel frame by steel bolts in double shear.

#### DELIVERIES TO MEET YOUR REQUIREMENTS

Off-the-shelf delivery from your Authorized Falk Distributor. Shipment from factory or warehouse stocks within 72 hours after receipt of your order.

Write for Bulletin 7100

**FALK**  
...a good name in industry

**THE FALK CORPORATION, 3001 W. CANAL ST., MILWAUKEE 1, WIS.**

Representatives and Distributors in Most Principal Cities

Manufacturers of Quality Gear Drives and Flexible Shaft Couplings

**\$80<sup>00</sup> SAVED**

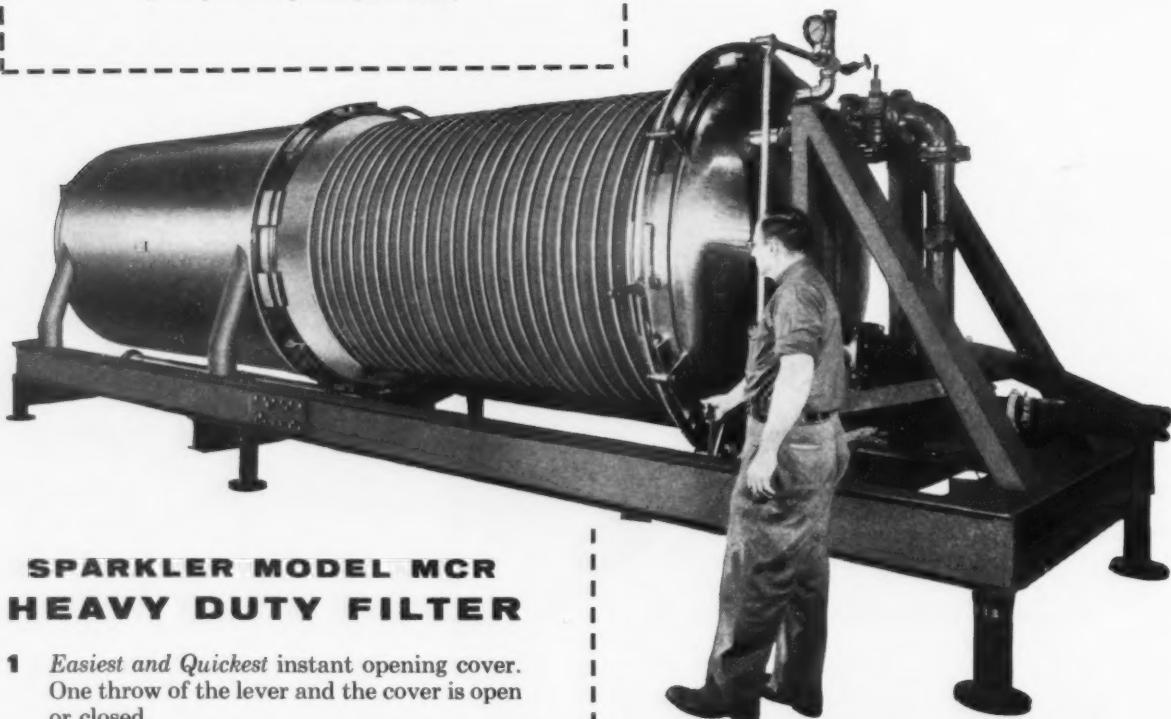
**EVERY DAY IN  
MAN HOURS ALONE  
WITH THIS FILTER**

(as reported by one processor)

Built to handle products with a high percentage of solids, with long operating cycles.

Engineered to lower filtration costs.  
Fast cleaning with a minimum of down time.

Anyone interested in reliable uniform quality, highest daily volume production, and economical operation, will not be satisfied with anything less than a Sparkler MCR.



**SPARKLER MODEL MCR  
HEAVY DUTY FILTER**

- 1 *Easiest and Quickest* instant opening cover. One throw of the lever and the cover is open or closed.
- 2 Retractable tank, hydraulic power operated with finger tip control.
- 3 No breaking of pipe connections with fixed head. No spillage.
- 4 Plates spread far apart to allow full size cake without clogging. Large top plate outlet and bottom drainage outlet reduces flow resistance.

*Write for complete facts in bulletin*

**SPARKLER  
FILTERS**

West Coast Branch, Sparkler Manufacturing Co.,  
8479 State Street, South Gate, California. Phone: LOain 7-0557.  
Berkeley Office, 2729 San Pablo Ave., Berkeley 2, Calif. Phone: THornwell 5-7470.  
Home Office, Mundelein, Ill.

Sparkler International Ltd. Plants in Canada, Holland, Italy, Australia

... for more details, circle No. 22 on Reader Service Postcard

WESTERN INDUSTRY — January 1958

... for more details, adv., opp. pg., circle No. 23 on Reader Service Postcard ➤

Your client gets  
twice his money's worth...  
**DAY-TO-DAY VENTILATION**  
plus FIRE PROTECTION!

WITH **COLT**  
**DUAL PURPOSE FIRE VENTILATORS**

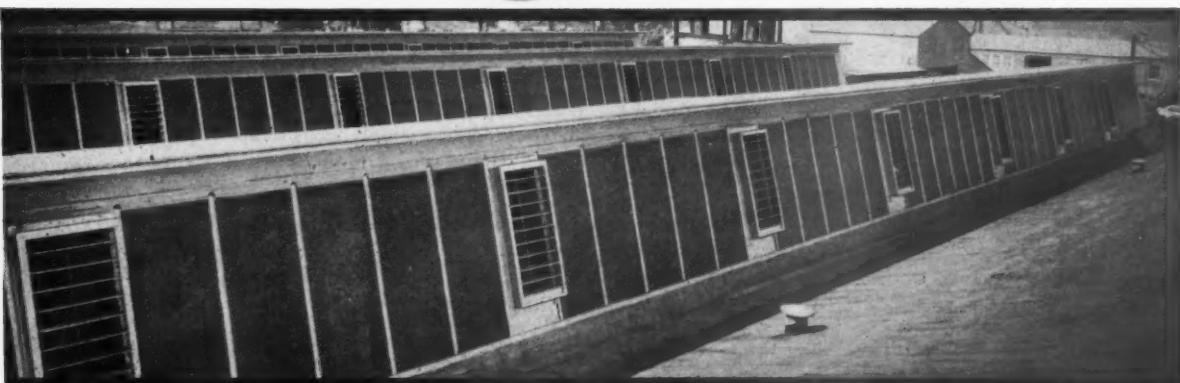
Unlike most fire protection equipment which serves no useful purpose until an unwanted emergency arises, Colt's new Dual Purpose Fire Ventilators work every day in your client's plant. In addition to functioning as a needed and efficient system of natural ventilation, the Colt COF/2046 Ventilators open automatically in case of fire to serve as a heat and smoke exhaust.

Fire authorities throughout the country agree that superheated air, smoke and explosive gases trapped under a roof with no ventilators or natural openings are the main cause of the horizontal spreading of disastrous industrial fires.

When you specify Colt Dual Purpose Ventilators in your client's building you give him twice as much . . . ventilation and fire protection . . . at no more cost than an ordinary ventilator.

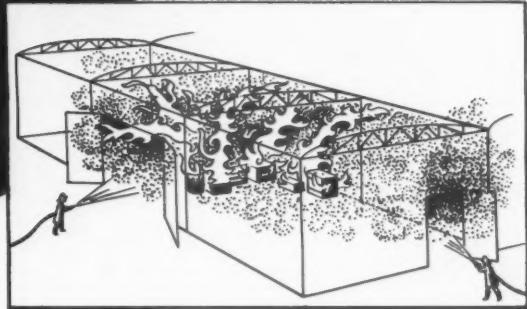
ANOTHER FINE PRODUCT OF

**COLT** VENTILATION OF AMERICA, INC.  
4652 Hollywood Boulevard, Los Angeles 27, California • Normandy 1-0261

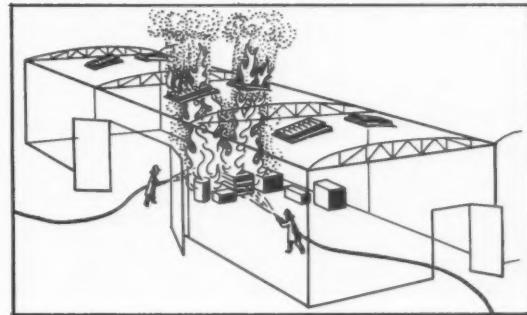


Shown above are some of the 27 CO/2046 Colt Clear Opening Adjustable Louver Ventilators installed in the saw-toothed roof at Nardon Manufacturing Company in Alhambra, California.

... for more details, circle No. 23 on Reader Service Postcard



In day-to-day use, the Colt COF/2046 Dual Purpose Fire Ventilator provides efficient, natural ventilation. In the event of fire, a fusible link triggers the ventilator open, providing automatic escape for superheated air and smoke.



Write today for free copy of  
" A Lecture on Fire Control in Industry"  
by M. J. Reaney.

ALSO: Free Technical Manual giving  
full details of the Colt System and  
equipment used.



**Check your AIM\*... Standard Oil Company of California did...  
Steel Strapping Machine aids fast, efficient packaging**

**STANDARD OIL COMPANY OF CALIFORNIA**, Richmond, includes an Acme Steel Semi-Automatic Model F-1 Strapping Machine in their fast, conveyorized packaging procedures to reinforce cartons of molded wax blocks. (Idea No. S1-1.)

Formerly, three men at separate strapping stations strapped 1600 cartons per production run with manual tools. Now, one man using the F-1 Semi-Automatic machine straps 1900 cartons per run, releasing two men for other plant work.

The Model F-1 makes important contributions to any modern packaging system. The operator simply feeds strap... push-button operation tensions, welds and cuts. And the Model F-1 applies strap with uniform tension, makes strapping fast, easy, economical and efficient.

**\*CHECK YOUR ACME IDEA MAN.** Located near you, he can help you get production-line packaging efficiency. Call or write Dept. WCS-18 Acme Steel Products Division, Acme Steel Company, 4903 Pacific Blvd., Los Angeles 58, California. Other offices in San Francisco, Seattle and Portland.



Acme Idea Man  
Art Hall,  
cooperated with  
Standard Oil  
Company of  
California in  
developing this  
strapping system.

**ACME  
STEEL**

**STEEL STRAPPING**

*...for more details, circle No. 24 on Reader Service Postcard*

**WESTERN INDUSTRY — January 1958**



*Lufkin* **SPRAL**  
**BEVEL GEAR REDUCERS**  
**FOR COOLING TOWER**  
**FAN DRIVES**



*Lufkin* **FOUNDRY & MACHINE COMPANY**

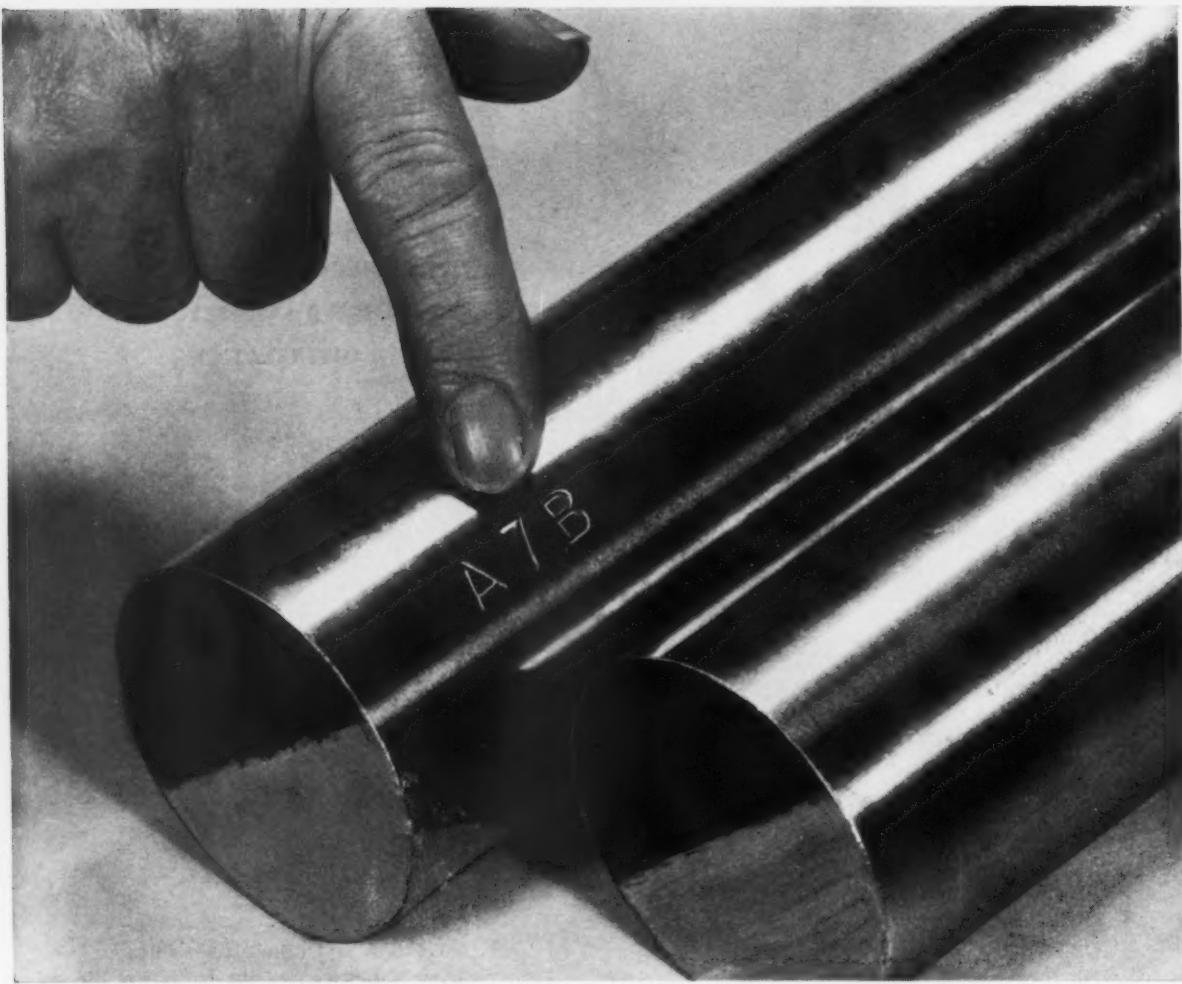
**LUFKIN, TEXAS**

Branch Sales and Service: Houston • Dallas • New York • Tulsa • Los Angeles • Seminole • Oklahoma City • Corpus Christi • Odessa  
 Kilgore • Wichita Falls • Casper, Wyoming • Great Bend, Kansas • Effingham, Illinois • Duncan, Oklahoma  
 Brookhaven, Mississippi • El Dorado, Arkansas

**PACIFIC COAST DIVISION, 5959 South Alameda, Los Angeles, Calif.**

... for more details, circle No. 25 on Reader Service Postcard

33



## With ONE you know, the other you don't

Two alloy steel bars of the same type can differ markedly in hardenability—if they come from different furnace heats. But with Ryerson 8-step quality control, there's no need to guess. Every Ryerson alloy bar is positively identified by heat number. You get a "heat history" report with every order.

*Here's what the Ryerson report tells you:*

1. **Heat analysis.** Not just the chemical range for the type of alloy, but the specific analysis of

the heat from which your steel was rolled.

2. **Tested Hardenability.** Not just the average hardenability for the alloy, but the actual Ryerson-tested hardenability for the particular heat... as quenched and at three draw temperatures.

You can always be *sure* with alloys from Ryerson. On your next order, get the protection offered by the Ryerson Certified Alloy Steel plan. It costs no more. Call your nearby Ryerson plant.



# RYERSON STEEL

*Principal products: Carbon, alloy and stainless steel—bars, structural, plates, sheets, tubing—aluminum, industrial plastics, metalworking machinery, etc.*

JOSEPH T. RYERSON & SON, INC., LOS ANGELES—Plant: 4310 E. Bandini Blvd. Mail: Box 3817, Los Angeles 54. Phones: ANgelus 2-6141, from San Diego BElmont 4-7582. SAN FRANCISCO—Plant: 65th & Hollis Sts., Emeryville. Mail: Box 8188, Emeryville, California. Phones: Olympic 3-2933, DOuglas 2-4211. SEATTLE—Plant: 1200 4th Ave., South. Mail: Box 3525, Seattle 24. Phone: SEneca 2300. SPOKANE—Plant: North 207 Freya St. Mail: Box 2158, Spokane 10. Phone: KEstone 5-1581.

... for more details, circle No. 26 on Reader Service Postcard

# MATERIAL HANDLING, PACKAGING & STORAGE

## SECTION 1—WESTERN INDUSTRY'S 1958 COST REDUCTION IDEA-BOOK

### When the floor is the limit— light weight trucks make it safe

THE FLOOR WAS the limit for the Dunham, Carrigan & Hayden Co., one of the largest wholesale hardware stores in the West.

Handling 100,000 different items—from heavy hardware nails to steel—their problem was to hold floor loads within safe limits in their four-story warehouse.

A powered fork lift truck was needed, but could the floor take the weight?

It was decided that light weight electrics could be used on the top floor so four Automatic Transporters,

driver-led low-lift pallet trucks and a walkie-type stacker, were set to work moving cartoned storage items.

At the receiving department, an automatic docker, stand-up end control lift truck with a capacity of 3,000-lb. was used along with a 4,000-lb. capacity electric truck, designed to enter and leave box cars through their low doorways.

One of the fleet of Transporters manufactured by Automatic Transportation Co., a division of The Yale & Towne Manufacturing Co., has been recruited into the firm's unloading operations. Together with the Skylift, it unloads both box cars and trucks.



An Automatic Docker, model FFE-30, loading at street levels at Dunham, Carrigan & Hayden Co. Automatic Dockers and Transporters and other trucks are used throughout this four-story warehouse. The light weight of the Transporters allow them to be used where safe floor load limits must be observed.



Enterprise specialists fit connecting rod into position for pinning to piston, using the Hydra-Set for precise control.

### Exact positioning of heavy parts can be a snap

EVER HAD TO POSITION a part weighing 500 lb. with accuracy to .001 in.?

case  
history  
2

73 to 7,703 hp.

This is a problem faced daily at Enterprise Engine division of General Metals Corp., which manufactures heavy duty diesel engines, ranging from

On this and the following pages are plenty of plant-operating know-how techniques to save you time and money throughout the year. If your job has to do with material handling, production equipment, power and power transmission, and plant engineering . . . you'll find the answers to many of your problems in these pages. And we'll keep you up-to-date on all other new ideas throughout the year.

Assembling the large engines involves not only the lifting of heavy parts, but requires hair-splitting precision. Enterprise Engine accomplishes this with the Hydra-Set, a hydraulically controlled instrument, which not only gives the weight indication of the load, but allows accurate raising and lowering for precision positioning.

According to *Al Radke*, Enterprise general foreman of assembly and test

development, "In our larger engines, the connecting rods weigh over 500 lb., and aligning the con rod bushing bore with the piston pin bore (for insertion of the pin) requires a high degree of control. The precision control possible with Hydra-Set saves us time and minimizes the possibility of damaging highly-machined engine parts."

Hydra-Set's levers can be operated by remote control.

## Here's "easy as pie" handling, storing of bulky materials

FAST, EASY HANDLING of 11,000-lb. paper rolls is an easy as pie operation at St. Regis Paper Co., Tacoma.

### case history 3

What's the secret? . . . St. Regis recently installed a paper roll lowerer and upender. Rolls of paper from the giant kraft producing machines are lowered from the second to the first floor for storage and shipping.

The lowerer, a single tray, skip-type unit with reversible drive, takes two rolls of paper side-by-side on its tray, and by means of push button controls, dispatches them to the ground floor for loading.

After discharge from the lowerer, rolls are set on end by the upender, a unit driven by a 7½-hp. electrofluid drive which is connected to the roll carriage by a direct-connected en-

closed gear drive and a dead-ended strand of precision steel roller chain.

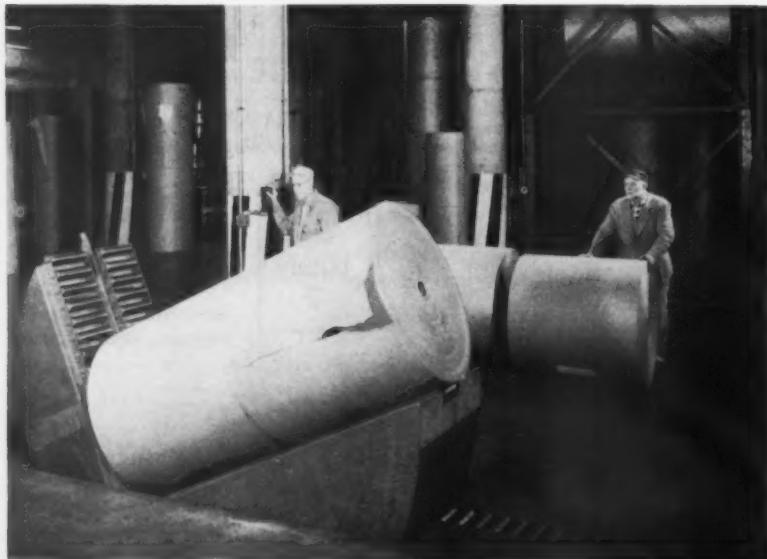
Once in the loading area, rolls are hoisted up by a power-operated lift truck equipped with rotating grab roll clamps, normally limited to a 90 deg. rotation angle to reduce the possibility of setting a roll down at an angle and damaging the edges.

The lowerer and upender together handle almost 200 tons of paper per eight-hour day.

And the equipment has proven especially useful in horizontal loading. It has done away with manual positioning of paper rolls on trucks as well as giving added assurance that the rolls will not be dropped onto the truck floor during unloading.

This Link-Belt equipment has cut handling costs and made a pleasure of storing normally difficult to handle paper rolls.

Power operated Link-Belt upender at St. Regis Paper Co., mill in Tacoma sets rolls of kraft paper on end for storage. At rear is a paper lowerer.



## These trucks handle most expensive loads in the world



Incoming loads are placed in storage rack by high-stacking Lewis-Shepard Model "MN".

HOW WOULD you handle a load no more than 30 in. wide, 40 in. long and 40 in. high, valued at several hundred thousand dollars?

### case history 4

Learn the answers from Hughes Aircraft Co., Culver City, Calif., which is doing this type of job every day with electrically-powered fork lift trucks, taking only one-tenth the time and trouble previously required.

The trucks handle some of the most expensive single loads handled by any fork trucks in the world. During the course of a normal working day, electronic units valued at several hundred thousand dollars are transported throughout the plant. A routine load handled by the trucks would be worth thousands of dollars.

Four different types of Lewis-Shepard trucks are used in the plant. There are two Model E fork lifts; three Jack-Stacker "walkies;" two Model J fork lifts, and one Model MN electric tiering truck.

Each type has a specific job, depending on its features. For example, the Model E and J fork lifts, both rider-

type vehicles, are used in the manufacturing and maintenance departments. In these two areas, the trucks are required to make long hauls.

In warehouses, where short hauls are called for, the Model MN and JackStackers are used. The MN is a rider-type truck especially designed for maneuvering and high stacking goods in aisles as narrow as six feet wide. Because of this and its medium-speed operation, it is ideally suited to warehousing operations.

The JackStackers are operated from a control handle while walking along with them, thus the designation "walkies." They are used in the general stores warehouse, as well as in other parts of the plant for a wide variety of special duties.

## This conveyor moves in right circles—delivers the goods

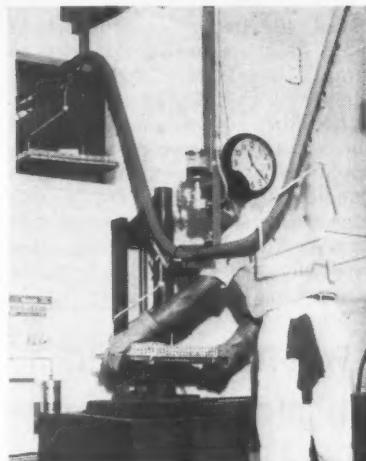
MOVING IN THE right circles makes sense when the circle forms a single loop from the receiving and staging room through the assembly section at Leach Corp. in Los Angeles.

This ideal overhead conveyor system, engineered into the new plant as a companion development to the latest assembly methods for power control relays, forms a 310-ft. loop.

Trays of relay components are loaded on the carriers in the staging area and the conveyor transports its load over aisles to various assembly work stations. Then it returns them to staging when solvent bath cleaning and drying are required.

While in transit the trays are up and out of the way, conserving valuable floor space and dipping only to work stations for various assembly steps.

Loading and unloading are also made easy by the quick vertical dips and by the closeness of incoming and



Note how this conveyor line is routed through small wall opening, saving floor space and keeping aisles clear.

outgoing lines. Chainveyor Corporation's 16-in radius turns enable parallel lines to be placed only 32 in. apart. Result—a worker can load a tray on either line, depending on whether it is going to another assembly station or returning for cleaning before the next step.

Formerly, parts were transported through the cycle by hand carts. Leach Corp. reports the new system has saved much assembly time and inconvenience, as well as reducing expensive manual handling.

## "Roughneck" truck smooths the way for talcum powder

TALCUM POWDER and Payloaders seem to go together like silk and sandpaper—but at a rock outcrop 30 mi. from Dillon, Wyo., owned by Tri State Minerals, one couldn't exist without the other.

The Payloader loads haul trucks with loose talc blasted from the mountainside.

At the plant, the raw talc is dumped into graded stockpiles, before being washed, sorted, pulverized and bagged for shipment for final use not only as a powder, but also in paints, paper making, etc.

The model HH Payloader, manufactured by the Frank G. Hough Co., is fast, produces fewer fines, levels stockpiles, keeps the yard clean and can work on concrete surfaces.

Here's a machine which earns its keep with real all around service.

The Payloader operates over all surfaces to haul loose talc blasted from the mountain.



## Steel strapping keeps firm grip on loads taking a bumpy ride

TAKE 2,500 BOARD ft. of bundled lumber weighing 4,500 lb. and give it a bumpy ride on a fork lift truck. Chances are you'll get only a few feet before—wham—the load spews all over the place.

Not so when a load is moved by the Kaibab Lumber Company of Holbrook, Ariz. One flat steel strap around the center of the bundle eliminates any danger that the boards will fall off during the fast, wobbly fork lift ride.

This firm uses flat steel strapping on 75 to 80% of its shipments.

On flatcars it uses 1 1/4 x .035 in. painted and waxed flat steel strapping, putting three bands around a bundle, with an average of 12 bundles per flat car. Five to seven flatcars are strapped and shipped each week. The

average flatcar load consists of 30,000 bd. ft. of timber weighing around 30,000 lb. Each car uses 500 ft. of steel strapping.

It takes one man with a Gerrard

Takes only a couple of minutes to secure a bundle of 2,500 bd. ft. of lumber.



model 40 stretcher and model 41 sealer from two to three minutes to strap a bundle of 2,500 bd. ft. of lumber.

Handling government orders calls for strict adherence to strapping specifications. The government wants bundles strapped with  $1\frac{1}{4}$  x .035 high tensile steel band. Gerrard steel strapping meets these specifications especially well with its high tensile strength of 122,000 lb. per sq. in.

## Two new staffers do more than man-sized job at Narmco

WORK IS BEING LOADED onto two new additions to the staff at the Narmco Manufacturing Co. of Le

### case history 8

Mesa, Calif., and for good reason. The newcomers are a Clarklift 40 and a Clark CT 21 tractor.

Narmco manufactures light weight, high strength structural components for aircraft, and material handling is an important part of the production process.

With the fork lift, storage space has been consolidated by using vertical air space rather than horizontal floor space. The additional room is used as a production area and has increased the volume of output without the necessity of erecting new buildings.

The tractor is used for inter-plant transportation. It pulls a fully loaded train of cars weighing 3,000 lb. over a  $14\frac{1}{2}\%$  grade for nearly 1,000 feet. This system alone has saved countless dollars and man-hours.

Clark equipment, purchased from the Robert H. Braun Co., Los Angeles, is quickly paying for itself in time and money savings.

**Clark C40 demonstrates ability to handle special loads in consolidated areas.**



## No more load damage here with this woven wire sling

LOAD DAMAGE has been ousted and replaced by safety on loading docks at the Weyerhaeuser Timber Co., specialists in handling bundled lumber. The secret lies in use of a woven wire sling.

Because of its weave construction, the sling provides a broad, flat bearing surface that fits snugly around the corners of the load during lifting.

Cutting action on corners of the load is eliminated by the transverse loop construction of the sling that permits it to hinge across its width rather than across its length. Lumber bundles were previously handled with wire rope or a chain, and bottom members of the load were cut into and ruined.

A sling 4 in. wide by 14 ft. long lifts loads over 3,500 lb. and because of the woven wire construction, the Gripper wire sling cannot snap suddenly on men working below.

The building industry has adapted Gripper slings, manufactured by Cambridge Wire Cloth Co., for handling



**Heave-ho . . . and lumber is hoisted safely—and economically—with Cambridge sling.**

finished doors and such things as pre-fabricated home sections. Economy and safety make a combination which is hard to beat—and Gripper slings provide both.

## These trucks really scoot along on their adaptable swivel casters

WHAT'S IN THE seat of your car? Don't look now—but it's largely cotton. And chances are it got there faster

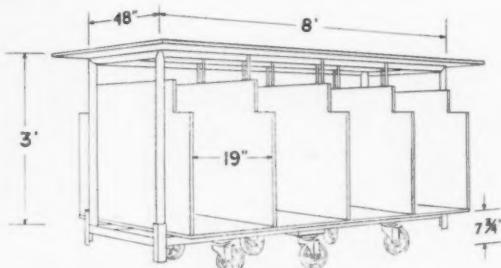
and more efficiently because National Automotive Fibres, the world's largest independent manufacturer of automotive interior trim, has integrated its material handling system by using two manually operated floor trucks.

Long streamers of processed cotton

used for padding automotive seat cushions are lapped several feet deep on wooden "cattle car" type castered trucks. Then it's moved to a roller conveyor for the application of glue and covering fabric. Precise lengths are cut and individually stacked on the same truck. When full, the trucks are quickly moved to other production areas.

For this application, National Automotive selected four Faultless 606-6 swivel casters to be bolted on each

This sketch shows construction features of National Automotive partitioned truck. Combined features of space utilization, ease of loading and unloading, and simple, economical construction are inherent in this type of castered floor truck.



truck. Equipped with ball bearing swivels, these inexpensive trucks solved the problem of handling a bulky product easily and economically.

Partitioned floor trucks comprise the second prime material handling method, serving both as a fast and convenient way of moving bulky fabrics, pressboard forms and assorted trim materials between manufacturing operations, and as temporary storage units for the same materials.

As a result, at least two expensive handling operations are completely cut out—unloading of materials from trucks to shelves and back into trucks when material is needed.

Each steel truck is equipped with four  $\frac{3}{4}$ -in. plywood vertical partitions, floors and tops and will accept

and handle easily a wide variety of shapes, sizes and types of materials. Besides the partitioned truck storage areas, materials can be stacked on top.

For maximum maneuverability, National Automotive engineers designed these floor trucks to be used with six equally spaced swivel casters. The two center casters are built up approximately 1 in., so that a tilt-type arrangement is achieved.

The trucks can easily be turned in a circle having a diameter equal to the truck's length.

This high degree of maneuverability, achieved by Faultless Caster Corp. swivel casters, is important when trucks are used in both production and storage areas and where space required for maximum production leaves little room for movement.

## Lift truck weight indicator cuts inventory time in half

INVENTORIES are being done in half the time with half the personnel and equipment at the Voit Rubber Corp. plant in Los Angeles.

What's the secret? —a lift truck weight indicator.

Inventory had to be taken every three months and was such a problem that it often resulted in a production slowdown. Stacks of trim in the plant and stacks of masterbatch slab stock in the yard all had to be weighed.

Two lift truck operators and their machines had to be taken from regular duties and set about picking the stacks up, one by one, taking them to the stationary platform scales, setting them on the scales, backing up, weighing the load, subtracting the

weight of the pallet, recording the weight, picking up the load again and returning it to its original location, often at the other side of the yard.

Voit's tread rubber plant processes millions of pounds of material a month and their inventory consists of 700,000 to 1,000,000 lb. of rubber—some chore.

Then they started using a lift truck weight indicator, a simple but rugged device actuated by the truck's hydraulic system. It converts the lift truck into a mobile scale, in no way restricting the truck's operation.

With this new device, manufactured by Martin-Decker Corp., Long Beach, Calif., Voit operators now lift a load off the ground, take a reading, set it down, move a few feet to the next stack of rubber and repeat the process.

No more running back and forth to scales with this lift truck weight indicator. Just lift up a load, take a reading and set it down again. With this Martin-Decker device, Voit Rubber figures it has cut its inventory personnel and time in half.



## Steel strapping came second, but now it's on top

STEEL STRAPPING came second. First, Metal Industries of El Monte, Calif., relied solely on a single face corrugated board wrapping held with tape. It proved unsafe for the large, bulky packages as well as time-consuming and costly.

Result—time lost, claims against transit companies and loss of customer satisfaction.

Shipping 75% of their product to the Los Angeles area by truck, these short-haul shipments are now safely secured with two bands of steel strapping.

With steel strapping, it takes one



New method with Stanley equipment is now the approved way at Metal Industries.

man 40 minutes to do what it would have taken him 2 hours to do with the old method—and the cost of shipping materials is less than a third of what it was when corrugated board wrapping was used.

In normal packaging, small pieces of double face corrugated board are placed under the edges of the steel straps to protect the metal frames from damage in transit. But when screens are shipped a greater distance they are completely wrapped in a single face corrugated board wrapper and secured with steel strapping.

Manufactured by the Stanley Works, New Britain, Conn., the steel strapping is not only saving on transit costs, packing time and material and handling time, but adds greatly to customer satisfaction.



Rough gear blank is carried into machine shop by Hyster Karry Krane. When gear is completed, Karry Krane takes it outside.

## "Crane on wheels" maintains steady production flow

A STEADY PRODUCTION flow of heavy parts and equipment is maintained at the Premier Gear and Machine Works, Portland, Ore., a firm specializing in the production and repair of machine parts and gear blanks, by operating a Karry Krane inside AND outside, too.

case history 13

Rough gear blanks are unloaded

and brought to a warehouse storage area. As needed, a gear blank is taken by the Karry Krane into the plant, to the start of the production line. When production is completed, the gear is returned to the yard to await shipment.

But that's only part of the Karry Krane's job.

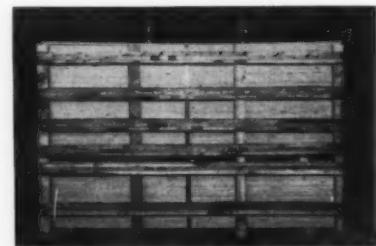
When a machine tool must be moved to change the production line layout, the Krane carries it across the street, through traffic, down and up ramps and over sidewalks to another storage warehouse.

Trunnion steering gives it excellent maneuverability in crowded areas and the Krane, manufactured by the Hyster Co., Portland, easily handles the variable shapes at this plant which weigh from 500 lb. up.

out steel strapping they would be stumped.

UMPQUA Plywood Co. is a good example, as it ships nothing but plywood from Roseburg, Ore. The car is partially loaded and then moves to Springfield, Ore., where the load is completed with doors or particle board.

Previous to strapping, extensive wood bracing was necessary to insure good arrival at Springfield. Strapping proved stronger, faster in application and more economical in material used, at the same time allowing the



"Snug as a bug in a rug" is this pile of lumber secured by Signode Strapping.

Springfield division to load the car immediately without first having to tear out extensive temporary bracing.

This type of loading is also being used for stop-over shipments where the customer has two receiving points some distance away from each other.

UMPQUA Plywood has been using Signode steel strapping for almost eighteen months and is more than pleased with the results.

## Elevator lifts problem load hard as bricks

THE PROBLEM WAS hard as bricks—4,200 lb. of them—which had to be lifted 25 ft. from ground level to a door leading to the kilns.

The company faced with it was the Calaveras Cement Co., Kentucky House, Calif.

After careful study, a 5000-lb. capacity elevator was installed. An operator at ground level places a pallet load of bricks on a conveyor and pushes the load onto the platform of the elevator, which consists of roller conveyor sections permanently tilted, so that the load rolls across and rests against a stop.

The operator pushes an UP button of the maintaining type, which responds to the momentary pressure and keeps the car in motion until it

## Here's a problem that tackles Newton's laws

EVERY action has an equal and opposite reaction. Take timber for instance: Action—Tightening of the lumber market means customers can now order mixed cars of plywood, particle board, doors and lumber where they were formerly required to order straight cars

of each. Reaction—A shipping problem for the mills, especially when the orders must originate from several sources of supply. Conclusion—With

## Try stepping up production — and ignoring handling

TRY PRODUCING 100,000 sq. ft. of corrugated board an hour without planning to cope with handling problems. See what happens —you can't do it.

American Forest Products Corp., Newark, Calif., knows it takes one of the most modern factories of its kind in the world to do just this.

Coordinated handling's the secret and that takes planning. Palletized loads of chemicals and rolls of liner-board weighing up to 7,000 lb. each, have to be unloaded, transported and stored.

Product-in-process goes through nine different production operations, plus transportation and storage of finished cartons in a temporary stor-

age area prior to shipment.

A fleet of five Towmotor fork lift trucks, including one model with a 7½-ton lifting capacity, another with 3 tons and two others with 2½-ton capacities, as well as one with a 2-ton capacity, handle all incoming and outgoing material.

The 7½-ton model, which is used for vertical stacking of liner-board rolls three and four tiers high, is equipped with a hydraulic upending clamp and a double telescopic mast. Two units are equipped with Tow-loader accessories that draw loads onto the fork lift truck carriage hydraulically and unload them the same way, eliminating the need for conventional pallets.

One lift truck has an extra wide blade attachment for fast pick-up. These machines give the company double the storage capacity provided by old-fashioned manual methods of stacking liner-board two-rolls-high in a horizontal position.

## How 6,000 sq. ft. can do the work of 24,000 sq. ft.

SIX THOUSAND sq. ft. is doing the work of 24,000 sq. ft. for Smith Blair Inc., So. San Francisco, designers and manufacturers of pipeline accessories. Savings of 50% in anticipated expansion have been achieved. Very good, considering 7½ cents per sq. ft. the general average cost for floor space in this area.

And a 75% saving in material handling time adds to this rosy profit picture. How was this accomplished? Well, for one thing, a complete re-evaluation of their material handling system, and a call to James Old & Son, distributors of Cargotainers.

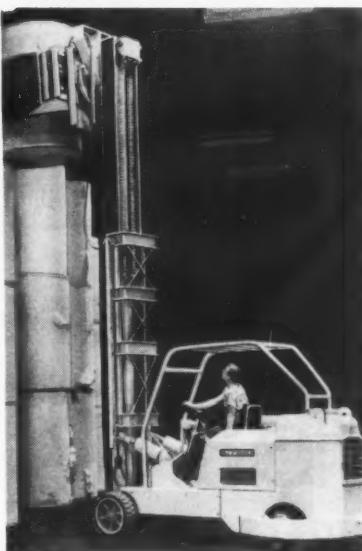
It was obvious that one of the shortcomings of the existing system was

### case history 17

Cargotainers are ready and waiting on production line. Stacking saves space.



Up . . . up . . . up . . . stacks this Towmotor fork lift at American Forest Products Corp. Firm uses a fleet of Towmotors to keep pace with production.



that the combined warehouse-factory was not taking complete advantage of height. Wasted space above storage bins begged to be used. So research on all available methods and systems of rack construction was begun.

Cargotainers, folding, shipping and storage wire containers with eight-way fork entry, were selected as a means of gaining more effective vertical space usage and to eliminate the duo-handling problem. These wire mesh baskets, manufactured by Tri-State Engineering Co., could be stacked four or five high, saving about three-quarters of the previously allocated storage space.

Prior to Cargotainers, they had used bins for general stock storage of their clamps, couplings, tapping saddles and sleeves. Another container was necessary to bring these process parts for castings, stampings and complete assemblies over to the work areas. Typical duo-handling problem.

Cargotainers eliminated the problem of several handlings of stampings and castings as they arrived from suppliers in bags and barrels. Under the old method, the material had to be placed in bins for storage, and when required for processing, transferred to tote-pans to be taken to the assembly areas. After processing, the finished products were returned to the bins or to the shipping area for another container. Too much handling involved.

With Cargotainers, the in-process material stays in the same container from receiving to storage, to in-process to shipping.

## Production soars sky high with overhead crane

PRODUCTION IS sky-high since the Chiksan Co. of Brea, Calif., installed an overhead crane.

### case history 18

The Chiksan Co., who themselves manufacture handling equipment (a hydraulically controlled loading arm for loading and unloading oil tankers), found that the oil industries' heavy demand for their product was severely taxing existing production facilities.

Experts were called in and careful evaluation showed that the flow of materials in the plant was not keeping pace with manufacturing requirements. Floor vehicles simply could not lift and move materials rapidly enough and were utilizing much needed floor space.

A Manning, Maxwell and Moore 2-ton single girder underhung crane bridge driven by a "Cushion Start" electric bridge drive was installed, and to it was mounted a 2-ton series "700" Load-Lifter electric hoist powered from a Budgit cord reel.

Result—an efficient overhead crane system at relatively low cost.

The crane, recommended by engineers of M. E. Canfield Co. of Los Angeles, is doing an outstanding job in speeding production.

And delivery schedules are being met; 35% more of the available floor space is being utilized for production; elimination of lift trucks has increased worker safety, and the assembly time for each unit has been substantially reduced.

This Manning, Maxwell and Moore crane saves 35% of available floor space for production.

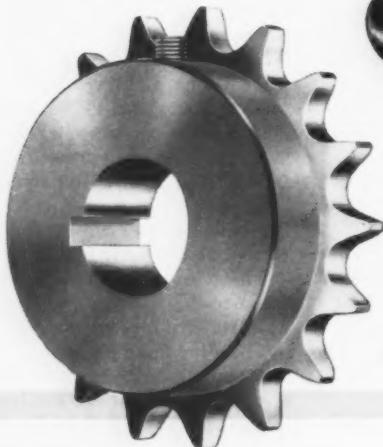


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WESTERN INDUSTRY — January 1958

# PRODUCTION EQUIPMENT AND TOOL APPLICATION

SECTION 2—WESTERN INDUSTRY'S 1958 COST REDUCTION IDEA-BOOK

## This company saves 14 man-hours on each unit by using stud welding

UP TO 14 man-hours is being saved on each of the Rucker Co. hydraulic units by using stud welding instead of conventional drilled and tapped holes.

**case history 19**  
The leading manufacturer of fluid power systems and special hydraulic units on the West Coast, the company also manufactures a 55-gal. drum filler that is used by the oil industry throughout the United States.

A few of these units are mounted on large fabricated tanks. Formerly it was necessary to secure the top bed plate to the tank by means of bolts screwed into drilled and tapped holes in the top flange of the tank.

In order to secure the end plate or access cover, it was necessary to hand-weld a machined, drilled and tapped boss to the end of the tank. This boss was needed in order to provide a leak-proof method of securing the cover plate.

Now, they are automatically end-

welding 1/2-in. diameter studs directly to the top flange of the tank and also to the end of the tank. These studs secure the bed plate and cover plate with regular nuts. This has eliminated considerable machining and all the drilling and tapping formerly done, and has reduced material handling because the light-weight stud welder can be more easily taken to the work site than to transport the tanks and material to a machine, such as a drill press or boring mill. These applications alone accounted for savings of 14 man-hours on each unit. Additional savings are made by attaching small parts such as pipe clamps and gages to the bed plate with end-welded studs instead of cap screws into drilled and tapped holes.

The welding was done with a welder which automatically controls the arc and welding cycle time. The light weight gun is held against the work much in the same manner as one would hold a small electric drill. The welding "gun" or tool is connected through welding cables to an automatic timer which controls the current from a conventional welding generator. By using special studs, which incorporate a flux in the end of the stud, the welding is done in one-half second or less. This permits production speeds up to 250 welds per hr. Studs welded in this manner will have physical properties equal in all respects to any other method of fastening such as through-bolting, hand-welding or drilled and tapped holes.

By use of the Nelson Stud Welder, the Rucker Co. has been able to combat rising production costs, provide their customers with higher quality products, and to reduce weight in their units.



"Worn out" Carborundum Co. diamond blade still going strong after cutting 105,000 sq. in. of terra cotta.

## Cutting efficiency has been doubled with diamond blade

CUTTING efficiency has been doubled at the Denver Terra Cotta Co. by using a diamond blade for cutting terra cotta.

**case history 20**

In recent tests, a DM 210-12 x .093 x 1-in. diamond blade had cut 97,000 sq. in. of terra cotta, approximately twice the average performance of competitive wheels. It was then considered worn out and taken off, the center being saved for reordering.

Later, the company found that it had to cut a further 3,700 in. of 3-in. material, and that there was only one new blade of a competitive make to work with. It failed after about 1,000 in. of material.

The "worn out" diamond blade, manufactured by the Carborundum Co., Niagara Falls, N. Y., was put back into service and finished the order making a total of 105,000 sq. in. cut by the test blade!

Operator welding stud to tank top with light weight Nelson "gun."



# Here's how to prevent time-cost deburring figures from rocketing

**TIME-COST FIGURES** can go haywire when applied to deburring small, complex parts involving a constantly changing finish operation. It is impossible to control exactly the amount of burr or flash that is thrown up.

The operator is confronted with a constantly varying part and 50% of the work-time involved in a hand-deburring operation is consumed in simply looking for the burr.

**Stopped-action photo** demonstrates Sand-O-Flex brushing action against part.



## Induction heater cuts brazing time from 5 min. to 90 sec.

**HAND-BRAZING** had been a constant bugaboo to the Rheem Manufacturing Co., Los Angeles—until it adopted a 25 kw. induction heater and fixture, to cut brazing time from 5 minutes to 90 seconds.

The job—brazing each joint on vane and shroud components for jet aircraft engines.

Doing the job by hand required five minutes for each joint and even then, a minimum of 10% had to be reworked. This meant cutting out, replacing, rebrazeing, and scrapping parts, with no sure idea of the finished quality.

With the Allis-Chalmers induction heater, brazing time per joint was cut from 5 minutes to 90 seconds a piece.

**Result**—increase by three more assemblies per comparable time unit, and there was no need for reworking pieces, either.

### case history 22

Once located, half of the remaining time is used in changing the position of the part so that the burr is accessible. Only 25% of the total operating time is used in actually attacking the burr itself.

Then Wm. R. Whittaker Co., Los Angeles, tried deburring with the abrasive brushing technique on many of their complex castings.

The part is held against a Sand-O-Flex wheel and the abrasive brushing action of the wheel reaches into all the cavities of the part, wiping over bosses and ridges and into cavities and holes, and exerting an automatic selectivity to remove burrs without gouging or digging into base metal.

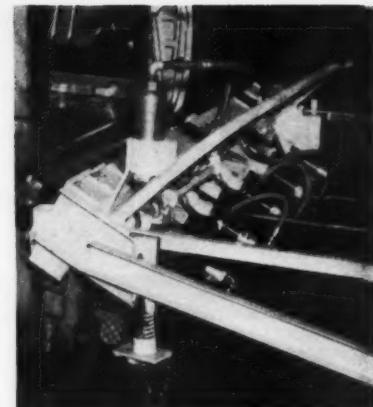
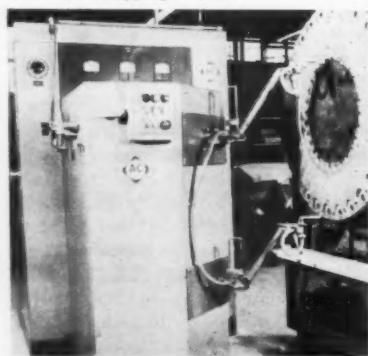
Burrs are snagged off as the work-piece is "mushed" into the wheel and the broken bases of the burrs smoothed by the abrasive brushing action.

The Sand-O-Flex wheel, manufactured by Merit Products, Inc., Los Angeles, was designed especially for this kind of metal working—and it's proving itself in dollar and cents savings.

Scraping and rework was cut to nothing when the heater took over the task, and each brazing operation was as nearly perfect as can be imagined.

By engineering the problem, Allis-Chalmers' electrical application department came up with the right solution—and made hand-brazeing a relic of the past.

**Allis-Chalmers induction heater** also cuts rework and scrapping to zero.



You can drill ten holes at a time with this equipment made by Aro Equipment Corp.

## Drilling steps up from 1 to 10 holes at the same time

**ARE YOU DRILLING** one hole at a time? Automatic equipment recently installed by a leading Western automotive assembly plant has made it possible to drill ten holes simultaneously as the bodies move along the assembly line.

By the use of compact and powerful drills, this plant has obtained a consistent hole pattern, accelerated its operation, and accomplished a considerable reduction in production costs.

A device known as a "limit switch" is tripped by a rod attached to the carrier of the bodies to be drilled. This tripping action energizes the wheel-mounted drill fixture and actuates an air cylinder which pushes the drilling unit into an open butterfly lock. The air pressure holds the drill fixture in position while the line continues.

The movement of the body as it starts forward trips another switch which starts the drilling part of the operation. A third switch shuts off the drill motors and a fourth disconnects the air from the cylinder which allows the drill fixture to be pulled from the body.

A suspension balancer returns the drill unit to the starting position where it awaits the next body. The entire line can be stopped if the drill fixture trips a fifth switch in which case the fixture is manually pulled

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from the body and the line started again.

Installation of automatic drilling equipment, manufactured by Aro Equipment Corp., Bryan, Ohio, for either stationary or portable drilling applications brings about the low cost and high production required by today's highly competitive market.

## Saving time, money by using continuous cast bronze parts

REJECTS HAVE been eliminated, machining time cut and 10 cents per pound in metal costs saved at Pacific Coast Engineering Co., Alameda, Calif.—

—by using continuous cast bronze for slide bars on its hydro sliding gates.

Sliding water control gates raise and lower within a frame which is an integral part of the dam structure. Slide bars frame the gate and guide gate movement. To work efficiently, the slide bars must have strength—minimum porosity and freedom from imperfection; precision contact—a perfectly straight, true line, and adaptability to machining for efficiency in fabrication.

Sand cast bronze was previously used, but rejects were running as high as 50% and machining time lost ranged from 50 to 85%.

Test after test at Pacific Coast Engineering showed that a continuous cast bronze bar might provide the badly needed solution.

Slide bars made from Asarcon continuous cast bronze mean big savings on sliding gates.



### case history 24

The process of continuously casting through a graphite die excludes gases as well as dross and other impurities. Hard and soft spots are eliminated because alloy constituents are evenly and finely dispersed. Since sand is not used, there can be no surface or internal abrasives to dull tools or reduce cutting speeds.

Physical properties are the best; fatigue characteristics are increased by 33 to 100% and impact strength from 15 to 100%; values of tensile, yield, and hardness are also definitely higher.

And it comes in lengths up to 105 in. (standard) or longer (on special arrangement).

Pacific Coast Engineering reports that this new, continuous cast bronze, manufactured by American Smelting & Refining Co., and distributed in the 11 Western states by Kingwell Bros., San Francisco, has proved a better product at lower cost—and that's not counting money saved by decreasing rejects due to pits.

## Don't "pop a valve"; follow the example of this plant

PROCESSING 20,000 tons of raw fruit per day into frozen and canned juices requires fast, continuous production—even a brief delay in canning could seriously impair the flavor and vitamin content of the juices.

The Treewise Products Co. of California and Florida, found that valve replacements were needed too frequently.

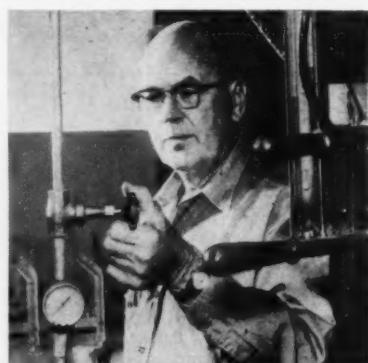
With boiler lines, change was relatively simple. It meant scheduling shutdown of the boiler, between shifts, every four to six weeks, if luck held that long.

But at vital control points such as pasteurizers and canners, time had to be "borrowed" immediately from the entire production line to maintain and replace wire-drawn valves. These "loans" were costly.

Search for a solution began, and it was agreed to install a trial LQ600 Bronze Globe valve, built from a combination of two different elements.

First was "brinalloy," a seating metal hardened all the way through to resist wear and corrosion better than 500 Brinell stainless steel and far more than case-hardened stainless steel exceeding 1,000 Brinell.

Secondly, seats and disks were lapped to obtain a micro-optically smooth, flat seating surface, con-



Lunkenheimer valve installed at canning machine is a critical control point.

structed as an integral part of the disk and body, and never requiring replacement or regrinding.

Installed in 1954 and 1955, the valves have so far required no servicing, despite heavy duty service—and steam passes through at 310 lb. pressure at temperatures of about 250 deg.

Valve service on boiler blow-off requires throttling every 3 to 4 hours and on steam cleaning lines, twice daily.

Until LQ600 went into service, the steam hose lines used for cleaning equipment and floors was leaking constantly, and in two weeks or less, valves formerly used were unable to shut off steam and had to be replaced.

But the non-slip design of the LQ600 handwheel allowed the operator to make accurate closures, even with wet hands.

Manufactured by the Lunkenheimer Co., the valves are now standard equipment at Treewise—assuring the highest quality product at lowest possible cost.

## Flash!—how 600 speed nuts can get you there fast

FLASH! . . . Four men and six hundred speed nuts built a 25-ft. house at Mill Valley, Calif., recently—and in only 4 hours.

Of geodesic design, construction was of plastic coated, pre-drilled plywood panels and speed nuts. That's all. And in case you're wondering, the finished product is a

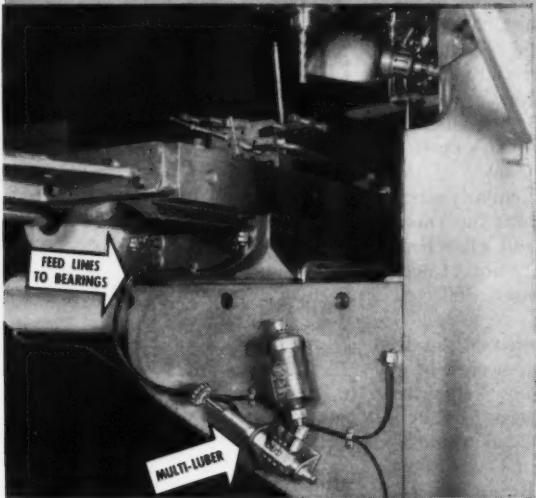
### case history 26

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From Hydraulic Ball-In-Head to Self-Tapping



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Complete selection of Air-Motors and Pump Tubes



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Complete Systems for Original 400 lb. Drums, or 5 gal. Packages



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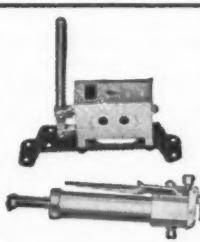
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(Portable-Steel Construction)  
High and Low Pressure Models.



**POWER-OPERATED TRANSFER PUMPS**  
(For Transferring Lubricants and Fluids From Original Drums)  
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domed-shaped shell house, suitable as a summer or resort cabin, and one which is expected to become very popular in California.

Speed nuts were chosen as fasteners for the plywood sections because their heat-treated spring steel flexibility is highly desirable when drawn against the simple and compound curves of the plywood sheeting. Their large bearing area preserves an unbroken ply surface without the use of spanner washers.

The impression on the nut allows quick starting and power driving of the screws—reducing assembly time. And they are vibration proof.

Manufactured by Tinnerman Products Inc., Cleveland, Ohio, speed nuts can be used to advantage in virtually any industry, just as successfully as they are presently being used in what might prove to be the house of the future.

## Giant roller leveler permits manufacture of largest louvers

THE LARGEST louvers ever manufactured almost died at the idea stage. Faced with the problem of a 30-day

case history  
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deadline to produce the king-sized aluminum sheets—38 ft., 8 in. in height and 50 in. wide—officials of Lemlar Manufacturing Co., Gardena, Calif., thought there was no equipment in the West capable of handling such a job.

And freight rates from Eastern mills, plus the time required for delivery, would seriously interfere with meeting the contract.

The answer came in the shape of a giant roller leveler supported by two sets of backup rolls, top and bottom, plus supporting structure to prevent roll deflection, which is capable of leveling large aluminum sheets to the

Aluminum sheet for massive louvers was roller-leveled by Bralco Metals, Inc.

exact specifications of the Lemlar Co.

With this roller leveler and cut-to-length line, the first of its kind in the West, Lemlar met its contract on time.

Now installed in the \$1,000,000 four-story 400 Beverly Building, Beverly Hills, Calif., the louvers are motor driven with positions automatically controlled to counter the sun's rays.

Timing and rotation angle of the louvers is governed by Lemlar's solar-time control that positions the vanes to exclude direct sun and solar heat and provides best distribution of neutral sky light and ground deflected light.

They can be fully opened on cloudy days for maximum light, or closed for protection on stormy days. Vanes are spaced on four-foot centers to match the window module and allow unobstructed view when open.

Savings effected by Bralco Metals' roller leveling service have been tremendous, and the added features of virtually immediate delivery of aluminum sheets up to any length required, with widths as great as 60 in., have added much to the ever-increasing possibilities in aluminum for modern architecture in the West.

## Automatic devices supply heartbeat for new facilities

HEARTBEAT of the new \$7,500,000 tire curing plant of the Goodyear Tire & Rubber Company comes from automation.

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28

The plant houses 88 tire curing presses with 176 molds, and is the first tire curing installation to apply automation to the loading and

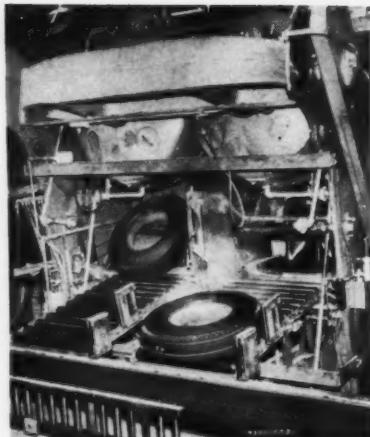
unloading of the intricate automatic presses.

Here's how it works.

Uncured tires are brought from tire builders into the new curing plant on a chain conveyor. As tires move along the press lines, they are transferred by hand to racks for temporary storage, or placed on another conveyor from which they are automatically transferred to the curing molds.

When cured, tires are automatically ejected onto a conveyor system that carries them to finishing, inspection and shipping stations.

The curing plant, a one-story structure 140 ft. wide and 540 ft. long, is connected to the main factory by a



Tires from automatic curing presses are automatically shunted onto a gravity conveyor and thence onto a belt.

tunnel and conveyor system. A basement houses the piping required to service the curing equipment—more than five miles of it.

Production at the plant includes tires for heavy trucks, buses and farm tractors. Airfoam rubber, airplane fuel cells, rotary hose and a wide range of other molded and extruded rubber products.

In producing more than 130,000,000 lb. of rubber products annually, Goodyear's Los Angeles plant employs approximately 2,800 persons.

## Portable electric tools save firm over \$500 a week

PORTABLE ELECTRIC TOOLS save \$500 a week in terms of production time alone at Reaco Inc., Los

Angeles, maker of custom built doors. A dozen Holguns and 12 Tapguns, for drilling and tapping respectively, (the Tapgun also doubles as a screwdriver), have been used by this plant 40 hr. a week for four years, with very profitable results.

The Reaco Co., which employs about 60 persons, fabricates and distributes aluminum entrance assemblies for commercial type constructions.

The framework is fastened together with screws. Approximately 25 screw-holes must be tapped on an average doorway unit. And 150 such doorways are produced each week—3,750 holes means a lot of drilling which ever side you look through.

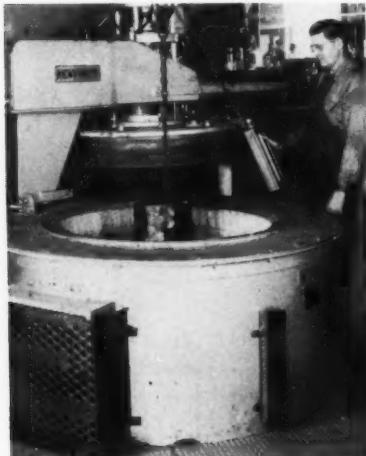


## Electric furnace solves problem of uneven heating

UNEVEN HEATING was the source of the problem.

Allegheny Ludlum Steel Corp., in Los Angeles, Calif., found that temperature variation within their gas-fired, car-bottom furnace was resulting in uneven hardness, necessitating the re-heating of many pieces.

But after installing a Hevi-Duty pit-type electric furnace, uniform



Die liners are being lowered into the Hevi-Duty electric furnace at Allegheny Ludlum. Furnace assures uniform hardness of parts.

hardness was obtained along the entire length of the 42-in. extruding die liners and rams.

Readings were taken at 18 different check points within the furnace chamber and with the temperature control setting at 975 deg. F., temperature variations over a 120-min. time interval were held within plus or minus 5 deg. F.

Parts are annealed in the electric furnace at 1,550 deg. F. prior to machining, then slow-cooled to 975 deg. F. and drawn at that temperature. Uniformity and precise control of the Hevi-Duty furnace, manufactured by the Hevi-Duty Electric Co., Milwaukee, Wis., have eliminated the costly necessity of reheating parts and have virtually eliminated rejects.

It is also estimated that maintenance costs on the furnace are 10% lower.

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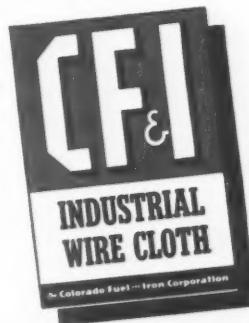
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Here's the handy setup of two Bellows-Locke tapping units and a punch press.

## Production up 600% as tapping units, punch press combine

PRODUCTION WAS increased over 600% for a tapping operation after Metwood Manufacturing Co., Garden, Calif., combined two tapping units with a 75-ton punch press.

Metwood was confronted with the problem of tapping No. 8-32 1/8 in. threads in two tips of a brass connector . . . hand operation for the tapping phase of production was too slow and too costly for order requirements.

The application of Bellows-Locke tapping units as a direct follow-up of

case history 31

the punch press operation allowed the parts to be completed in one continuous and automatic operation.

Brass strip stock is fed into a ten station die where it is formed, cut off, and fed into a magazine which positions it for the tapping operation. The punch press continuous cycles at the rate of 50 strokes per minute and the tapping is done during one-half this time.

Time for complete tapping cycles is only .6 sec.

During this time the tapping units must traverse one inch to the stampings and move 1/4 in. to tap, then reverse 1 1/4 in. to their original position.

A complete safety interlock in the press control circuit is accomplished by limit switches on all of the cams in the die and the interlock switches on the tapping units.

Prior to this special setup, stampings were hand fed into a holding fixture and tapped in two operations by a drill press spindle with a friction tapping head.

The stampings, due to their shapes, were awkward to locate in the fixture and production was approximately 500 parts per hour.

Production rate is now 3,000 parts an hour and there is much more uniformity to the product than obtained by hand operation.

## Multipresses aid firm on way to automatic parts fabrication

BLAST IS the business of the SMP Co. of Portland, Ore. Every time the new Army grenade is lobbed from an infantry rifle and explodes on the target, SMP breathes a sigh of relief—and puts some oil in its Multipresses.

This firm had screw machines as its principal tool of production a decade ago.

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Then it changed to presses—with immediate success.

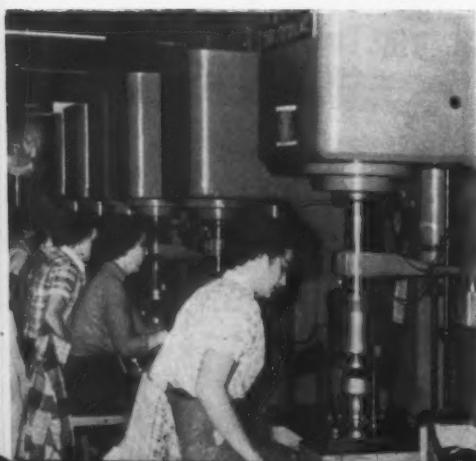
The rifle grenade, 17 in. overall, consists of the nose, body assembly and fin, which is the part mounted on the rifle. The rear end of the body contains the charge.

The cone wall has a .002 thickness tolerance. But there is no machining operation, it's all press work. A copper tubing conduit (purchased round, but squared up) runs from front to rear of the assembly.

Fabrication borders on automation, which was considered essential since the company competed for the job on a nation-wide basis, and felt that tooling took top priority to produce units of low cost.

In the fabrication of the four-point fins that are later assembled to the stabilizer, formed fins on a moving belt assembly line run between a 60-ton

The Denison body press line . . . where bodies are progressively drawn to cone shape with flat end.



V&O press and a Denison Multipress, both of which simultaneously punch eight holes through the tube and fin as they are held together. Fast, efficient quality control results.

The body press line consists of one 25-ton and five 15-ton Denisons, while the ogive press line has a 25-ton, then four 15-ton Denisons.

## Rotoblast table saves 25% on cleaning castings



This 8 ft. Pangborn table allows for quicker, easier loading of parts.

SAVINGS UP to 25% are being realized in the cleaning of steel castings at the Torrance plant of the National Supply Co. through the use of an 8-ft. Rotoblast table.

Steel castings up to 8 ft. in diameter, 42 in. high and with a maximum table load of 10,000 lb. are cleaned at an average rate of 5,000 lb. per hr., and at an average cost of seven dollars per ton—approximately 25% of the former cost of cleaning castings when cleaned in a shot blast room with a man-operated shot blast hose.

Easier, quicker loading of the machine accounts for a large part of the savings over the older method, and the method results in cleaner castings.

Manual labor and hazards in working conditions are reduced for the operator and the heavy protective garments required in room shot blasting are not necessary with Rotoblast, manufactured by the Pangborn Corp. of Hagerstown, Md.



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R. D. Murray (second from right), production manager of the production division of Hycon Co., points out one of variety of jobs Walker-Turner multiple spindle drill presses can be adapted for.

## Tool changes, handling costs cut by bank of drill presses

ONE OPERATOR is drilling, reaming and tapping in the same work space at the Hycon Manufacturing Company at Pasadena, Calif.—and because tool changes and material handling costs are cut, they're saving a mint of money.

The firm manufactures voltmeters, ohmeters, oscilloscopes, color-bar dot generators (for testing color television sets,) and miniature power supply apparatus.

A major share of Hycon's output, like other companies in the electronic field, is earmarked for the military. The firm produces a wide range of automatic testing equipment for missile guidance systems and for air-

borne weapons systems.

To meet military needs without ignoring the commercial electronic industry, Hycon had expanded from its original one plant to its present 10—all within the past ten years.

But most important—it now has a bank of 30 Rockwell manufactured Walker-Turner drill presses at plant 2 in Pasadena, which production manager R. D. Murray says were chosen because he knew maintenance costs would be low and because "our lead men wouldn't settle for anything else."

Quick delivery clinched the deal for Hycon, added Murray, who reported that the machines were delivered promptly.

## 13 miles of welds made by two sigma machines

THIRTEEN MILES OF FILLET WELDS were made by two sigma welding machines in low-carbon steel sheet piling needed to construct a large cellular bulkhead for a 2,600-ft. loading dock at Marine Terminal No. 2 of Richfield Oil Corp. in Long Beach, Calif.

Each of the 70 cells in the dock averaged 31-ft. across the center and 31-ft. in length, while sheet piling ranged from 45 to 100-ft. in length. Inside and outside welds on the cells were 4 ft. 9 in. long, while welds on both sides of the diahrgms were 9 ft. long.

All welding was done in a vertical position, with two 500-ampere rectifiers units supplying the sigma machines with power. Chadwick and Buchanan Construction Co. of Long Beach completed all the welding for Guy F. Atkinson Co. in approximately one year.

In order to make the sigma machines even more portable for welding the diahrgms, both the wire drive units and wire reels were separated from the control units and suspended under the gantry bridge. After all welding was completed and a final elevation established, the tops of the sheet piling were powder-cut to a finish line.

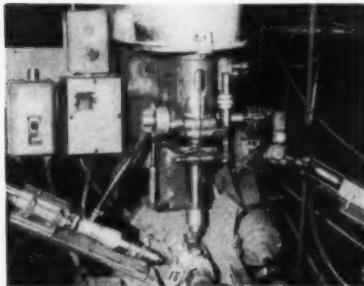
The 1/16-in. diameter steel wire used to produce the welds in the low-carbon steel contains a special deoxidizing agent that imparts a fine grain to the weld metal. Inert argon gas was used in the operation to protect the weld zone from contamination by the atmosphere.

# Production doubled with drill mounted at proper angle

PRODUCTION of gas stoves in a California metalworking plant was bottlenecked in the burner department, where each hole had to be drilled separately through  $\frac{3}{8}$ -in. thick cast iron.

Since there were 96 No. 42 holes, drilled in two rows in each burner, with 48 holes in each row, it took approximately 6 or 7 minutes to drill all 96 holes with a standard drill press.

When an Ingersoll-Rand size OBD drill was installed on the drill press



Proper approach to drilling is demonstrated by this Ingersoll-Rand Size OBD Drill.

at the proper angle, both rows were drilled at the same time. The OBD drill was mounted in a Multi-Angle drill unit, made by Commander Manufacturing Co.

As the drill press puts a hole in one row, the Ingersoll-Rand OBD drill puts a corresponding hole in the second row. Now burner drilling time is cut to two minutes, and burner production is more than doubled.

## Carburizing plight? try this solution for a clean finish

CARBURIZING can be a problem, as it was to the Holister Coil Spring Manufacturing Co. in Los Angeles—before they started using a Shaker hearth furnace.

Now, clips, flat springs, spring washers and other types of springs are treated on an assembly line basis, producing a

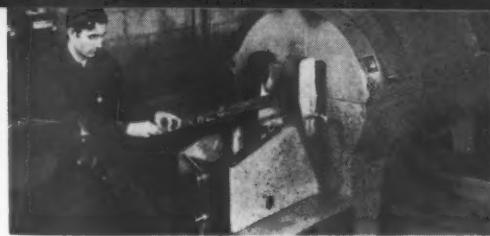
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very clean and uniform quality product.

Controlled heating eliminates distortion, and despite the fact that the furnace is used eight hours a day, five days a week at temperatures of about 1,600 deg. F., it averages about 100 lb. of work per hour with virtually no maintenance costs.

With a Pacific isothermal quench unit, it affords an ideal combination for martempering or austempering.

Operation is simple. With parts to be treated fed directly into the furnace manually or automatically from a hopper mounted in front of the hearth plate, the work is moved through the furnace by short, abrupt hearth plate motions, which may be



Proved features of the Shaker Hearth Furnace are its durability and uniformity.

regulated in speed, frequency and length of change to the heating cycle from two to twenty minutes. A simple cam and variable-speed motor provides the motion with easy, accurate adjustments.

Available for use with either gas or electric heating, the furnace manufactured by Pacific Scientific Co., can be built in many sizes and with capacities up to 400 lb.

## LOOK AT YOUR FLOORS ....your safety engineer does!



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Los Angeles

Floors and hallways in this modern medical center are kept safe and beautiful with Columbia Floor Care Products.

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A Columbia field representative will be glad to show your Safety Engineer how he can be sure your floors will be safer. Why not suggest he ask for an on-the-floor demonstration today? No obligation, of course.

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Lubriplate No. 630-2 is a high temperature, extreme pressure, water-repellent, grease type lubricant. Ideal for the general lubrication of Industrial, Automotive, Construction, Farm and Marine Equipment. Lubriplate Grease Gun Cartridges provide an easy, quick, economical means of application. Prevent the waste and mess of hand filling. Packed 10 Cartridges in a handy carrying carton.

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... for more details, circle No. 34

## Snap-action switches prevent damage to costly equipment

FOUR SNAP-ACTION switches are preventing damage to expensive equipment at Booth-Kelly Lumber Co. in Springfield, Ore.

Two of the switches stop moving railroad cars if the reversing mechanism fails while they are being loaded with wood chips. The other two switches signal the operator of the switch engine when it is safe to move the cars.

Here's how it works.

The box car is moved back and forth beneath the hopper by means of a sling attached to lugs on an electrically driven cable. The car travels in one direction until it crosses the path of one of two photo-electric cells.

## Your cement mixer better make more than putty putty

THERE'S MORE to mixing cement than stirring sand and water until it looks like porridge, then spreading it thick.

The big problem is keeping a consistently accurate proportion—that requires a careful system.

Installed in the Permanente Cement Co.'s new \$13,000,000 installation 125 miles outside Los Angeles is what is believed to be the best proportioning system in the industry. Kaiser engineers, working in conjunction with the General Conveyor Co. of San Francisco, installed the system.

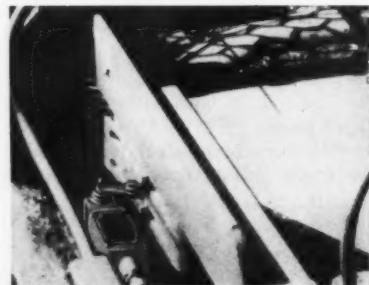
Here's how it works . . .

On the raw side (units working with raw materials,) are six machines

The photo cell initiates a time delay (to ensure even loading of the chips in the end of the car), and reverses the direction of the car's travel. If the cell fails, lugs on the cable operate a spring loaded device which actuates another switch, stopping the drive and preventing damage to the cable and motor.

These switches, manufactured by Micro Switch, a division of Minneapolis-Honeywell Regulator Co., Freeport, Ill., have given top-flight performance for the past two years.

**Close-up of the switch actuating mechanism at each end of the drive cable.**



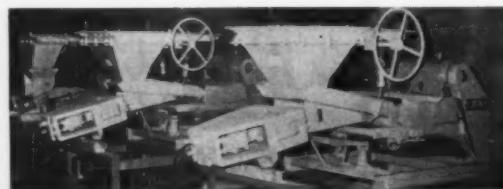
of which five operate at any one given time. Two 450 units working alternately handle  $\frac{3}{4} \times 0$  limestone at 40 to 110 tph. One 118 unit handles  $1 \times 0$  millscale in a capacity range of from  $\frac{1}{2}$  to 3 tph. Another 220 AC machine measures  $\frac{3}{4} \times 0$  high grade clay at 1 to 6 tph.

One 220 MC unit, capacity range 4 to 20 tph. for  $\frac{3}{4} \times 0$  spalls and one 220 MC unit handling  $\frac{3}{4} \times 0$  plant clay in a 4 to 20 tph. capacity range.

On the finish side, there are four units. Two 330 "Waytrols" handling  $\frac{1}{2} \times 0$  clinker in a capacity range to 15 to 50 tph. and two 118 units with a capacity  $\frac{3}{4} \times 0$  handle  $1 \times 0$  gypsum.

The ten units, six raw and four finish, are subdivided into three groups in such a manner that one group on the raw side and two groups on the finish are in proportioning arrangement.

All changes in ratio mix are remotely effected in the chemist's control room, while total tonnage adjustment may be made at the local miller's platform.



This battery of Jeffrey Manufacturing Co. Waytrols is operating on the raw side at the Permanente Cement Co.'s new \$13,000,000 installation near Los Angeles.

# New saw blade lasts 10 times longer between sharpenings

A SAW BLADE which lasts ten times longer between sharpenings is being used by the Major Wood Products Co. of Oakland, Calif.—and only 10% of the teeth do the actual cutting!

Called "Dial-a-Sharp-Saw," the device is a circular saw blade mounted off-center on the arbor.

In tests, 14,000 ft. of two-in. Douglas fir were cut before redialing the saw to a new setting. Only 10% of the blade was dull—and with a 1½-hp. saw, too.

An off-center collar fits over the arbor, and the blade mounts on this collar. It can be dialed to any of ten numbered positions so that a specific 10% of the saw teeth are high enough to do the actual cutting.

When these teeth are dulled, the saw



Only 10% of the teeth are operating at one time in this blade made by Saw Engineering.

is dialed to a new setting which brings sharp teeth into the cut.

With 90% of the teeth running free and doing no work, if an obstruction is hit, only 10% of the saw is damaged.

And there are other advantages to this device manufactured by Saw Engineering, Inc. Less power is needed for a specific cut, and less heat is generated in sawing, because the part of the blade running free dissipates the heat. Result, less tendency to lose temper and become dull—which is something we could all use!

## case history 40



No. 25 Actual Size  
Pitch 1/4" Width 1/8"



No. 35 Actual Size  
Pitch 3/8" Width 3/16"



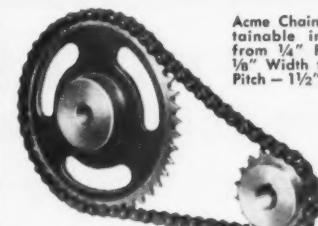
No. 41 Actual Size  
Pitch 1/2" Width 1/4"



No. 40 Actual Size  
Pitch 1/2" Width 5/16"



No. 50 Actual Size Pitch 5/8" Width 3/8"



Acme Chain is obtainable in sizes from 1/4" Pitch — 1/8" Width to 2 1/2" Pitch — 1 1/2" Width.

Complete line of stock bore, steel and cast iron single sprockets, cast iron hub sprockets and all steel split or solid hub sprockets available.



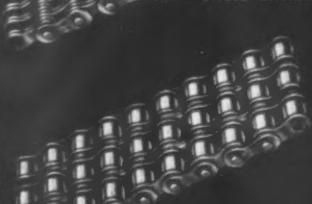
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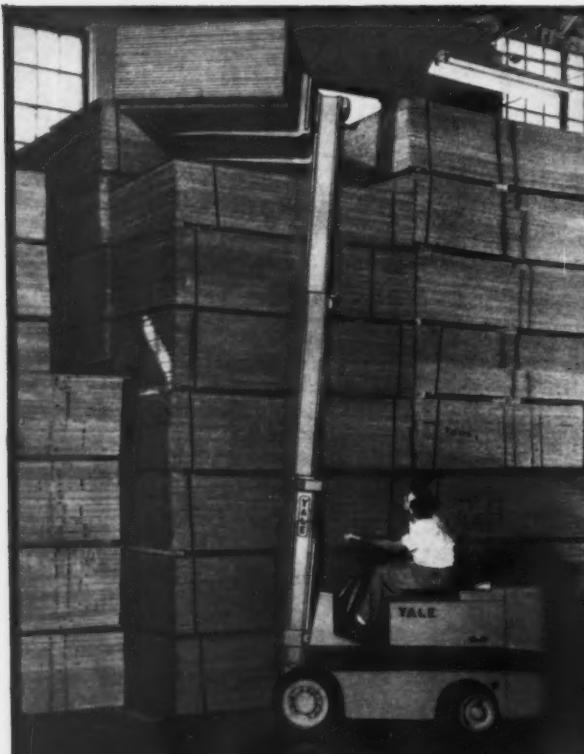
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MASSACHUSETTS

... for more details, circle No. 35 on Reader Service Postcard

# ONE TRUCK...DOUBLE DUTY



**SAVE SPACE!** Mast up! Stacks high, makes full use of air rights. Helps you get full value from every foot of your warehouse space.



**SAVE TIME!** Mast down! Allows truck to enter low-headroom areas—eliminating time-consuming re-handling operations.

## NEW YALE TRIPLEX MAST FEATURES HIGH LIFT, LOW-HEADROOM CLEARANCE *for fast, continuous handling operations*

### 210"-HIGH REACH — 96"-LOW SILHOUETTE

Boost storage capacity of present warehouse! Tier loads high as 210"! With mast up, take full advantage of air rights. With mast down, move safely into freightcars or trailer trucks—into any low-headroom area. Result: smooth, continuous flow of materials in and out of your storage, production and shipping areas.

New Yale Triplex Masts offer outstanding features—new interlocking I-beam

construction for greater load stability—new open-front design that gives the driver full forward visibility.

Yale Triplex Masts are available with maximum fork-lift heights of 108", 144", 180", 198" and 210". With mast down, overall truck heights are 59", 71", 83", 90", and 96" respectively. Capacities: 3,000, 4,000 and 5,000 lbs. For full facts, write The Yale & Towne Mfg. Co., Philadelphia 15, Pa. Dept. A-261.



# YALE\*

\*REG. U. S. PAT. OFF.

**YALE & TOWNE**

## INDUSTRIAL LIFT TRUCKS AND HOISTS

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WAREHOUSERS • HAND TRUCKS • HAND AND ELECTRIC HOISTS

YALE MATERIALS HANDLING DIVISION, A DIVISION OF THE YALE & TOWNE MANUFACTURING CO. MANUFACTURING PLANTS: PHILADELPHIA, PA.; SAN LEANDRO, CALIF.

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WESTERN INDUSTRY — January 1958

# POWER & MECHANICAL POWER TRANSMISSION

## SECTION 3—WESTERN INDUSTRY'S 1958 COST REDUCTION IDEA-BOOK

### How to boost production 50% — and not foul up the works

STEPPING UP production speeds without straining the extremely thin foil it manufactures, was the problem facing Kaiser Aluminum and Chemical Corp. And it succeeded — output has been boosted 50%.

Aluminum foil can shatter like glass under stress, and great care had to be taken to regulate the pressure, while increasing production speeds.

At the company's new plant at Permanente, Calif., a high-speed, four-high foil mill equipped with a variable-speed drive system which reduces .026-in. hard aluminum to .00025-in. foil at speeds of up to 3,000 ft. per min., was installed. And strip width is adjustable from 28 in. to 56 in., maintaining precise constant tension.

The 1,000 hp. main mill drive, adjustable from a crawling 50 ft. per

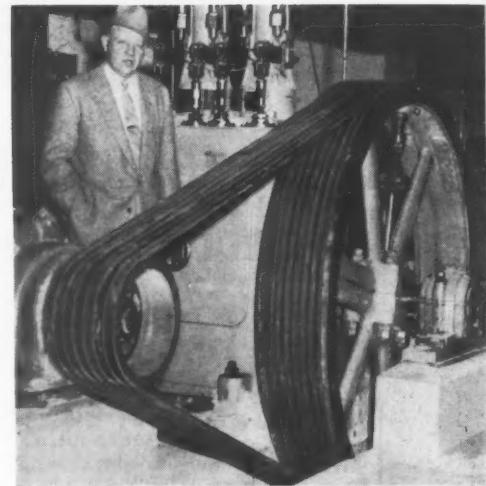
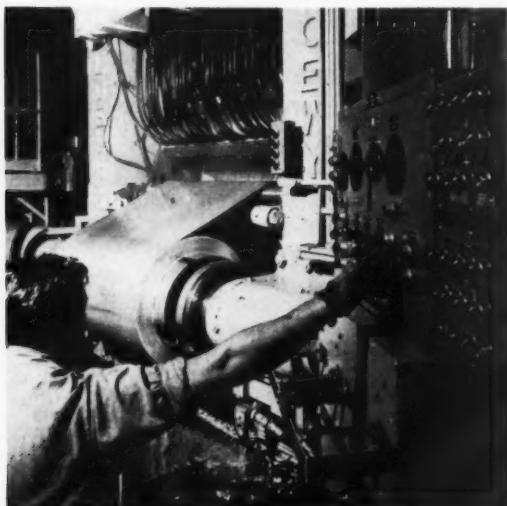
min. for threading and set-up, is equipped with a tachometer generator which feeds an electrical speed reference signal through a regulator to the wind-up and pay-off reel drives.

Simply turning one speed-setting rheostat to change the main mill drive speed also automatically changes the speed of the auxiliary drives, so that the foil is under uniform, closely regulated tension at all times.

A motor-operated rheostat permits pre-setting mill motor speeds and acceleration and deceleration rates. The rheostat is connected to a voltage regulator which keeps voltage applied to the mill motor at a constant value dictated by the setting, regardless of the load on the motor.

The variable speed drive system and the voltage regulator were both built by the Reliance Electric and Engineering Co. of Cleveland, Ohio, and Burlingame, Calif.

Off she goes... and the variable speed drive and voltage regulator built by Reliance Electric and Engineering Co. will see that the aluminum foil will not shatter.



George Luker, general superintendent of California Oxygen Co., stands beside the Durkee-Atwood V-belt installation.

### Got a power system that can really take a beating?

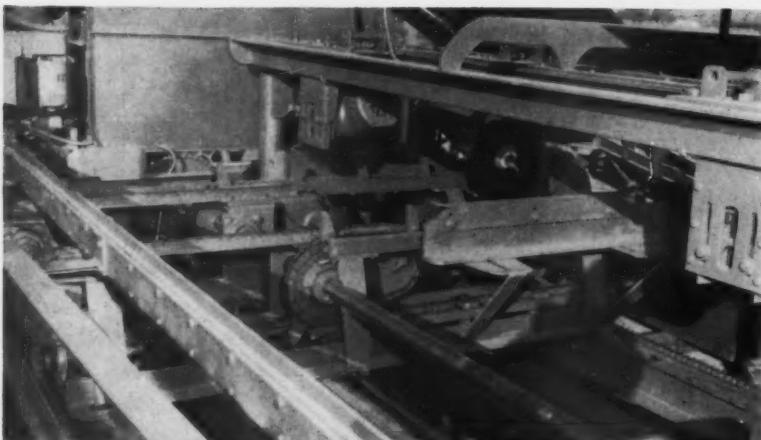
A POWER TRANSMISSION system that could really "take a beating" was the problem of the California

Oxygen Co., producer of almost 14 tons of liquid oxygen per day at its Sacramento plant.

A 60 hp., 875 rpm. electric motor serves as both driver and brake on the expansion engine, used in production, with constant reversal of force. A really grinding test for bolts.

Then the company installed a matched set of seven tough V-belts, and the problem was solved.

Selected for durability and balance, and manufactured by the Durkee-Atwood Co. of Minneapolis, the No. d-330 V-belts are really taking a beating each day—and coming back, strong as ever, for more.



This Diamond Chain Co., Inc., setup is stepping up production at Fluor Production Co.

## Diamonds in teeth and nose? how about Diamond chains??

DIAMONDS IN TEETH, in noses, on fingers—and how about Diamond roller chains?

The Fluor Products Co., manufacturer of industrial cooling towers, wood tanks and wooden pipe, use Diamond chains, manufactured by Diamond Chain Co., Inc. and profitably, too.

Look at their Dado In-Feed machine. It prepares dimension redwood for resawing, and working with band saws, produces a finished batt used in the cooling tower interior. The lumber is fed through overhead cutting heads and on through the resaws, controlling the tolerance and concentrating production at one point.

**case history**  
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Previous to the installation of this machine the product was processed, after resawing, at several hand operated stations.

Now, no more double handling. And by using it with a saw cerf, Fluor has increased capacity for this operation approximately 60%.

Then there is the Diamond 1-in. pitch serpentine roller chain drive. It operates over an 11-tooth driver sprocket that is mounted on a 1 1/2 hp. vari-speed geared head motor. A 22-tooth sprocket drives the two off-bear delivery chains over a 25-tooth idler and a 44-tooth sprocket mounted on a Flaton torque limiting clutch shaft which drives the two bed feed chains.

Yes, "Diamonds" are a hard wearing combination in any setting.

## Here's a complete power setup in only 29 min.—with two men

FROM A bare floor start Western plants can have a complete manufacturing operation—including power, facility and communication supply to each operator position, work positions, equipment and materials for a four-position operation—in only 29 minutes.

And it can be done by two men using only a socket wrench. Of immediate interest to defense

**case history**  
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Four position Work Center (two two-position ones joined) shown with tops removed.

experts, the system has a hundred applications. Its nerve center is a narrow, less-than-3-in.-wide, power facilities and communication channel which makes it possible to support plant services all over a factory or manufacturing area by joining sections with a simple connecting device.

With this system it is possible for even unskilled people to set up an entire factory. By bringing power facilities and communication lines into one point in a bare room, it is possible to set up the entire manufacturing operation through the use of the 3-in. channel, which can be ceiling mounted, mounted on the wall or on floor stanchions.

The Alden channel makes it possible at each operator position to instantly tap and get any type of power—electrical, refrigerant, steam, hot water, gas hydraulic line, air, rare gas, vacuum, or literally any kind that can be carried over a wired circuit or through a pipe line.

Because all these power facilities are available at every operator position, the system is a flexible one. It eliminates all restriction and limitations as to job location and the simplicity of installation is such, that if an emergency warranted, 20 men could set up a 1,000-position factory in 12 hours!

## Special speed drive powers conveyor for peak performance

A RACE TRACK-SHAPED 850 ft. compartmented conveyor, powered by a special speed drive, is helping the

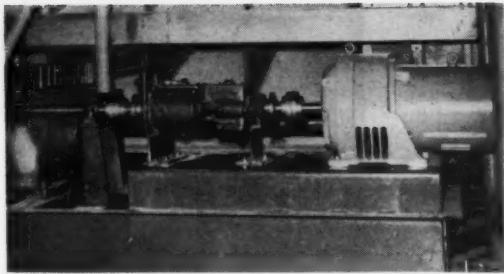
West Coast United Parcel Service package sorting center redistribute parcels among 38 delivery truck stations within the center.

Weight pulled when the conveyor is fully loaded is 540,000 lb.

Delivering the power needed for such a haul is the task of a 30 hp. Adjusto-Spede (alternating current adjustable speed drive).

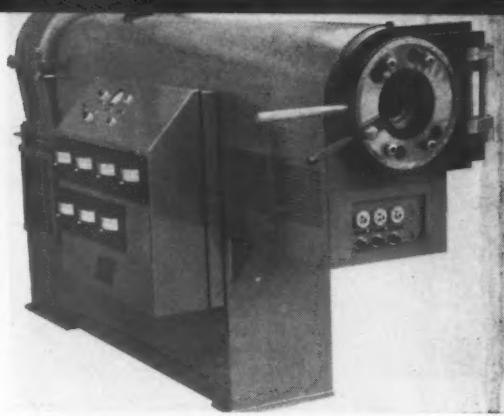
Besides providing adjustable speed, the unit gives controlled acceleration from zero to full speed, while reducing the stress on conveyor parts.

The jam relay protection system benefits from this smooth acceleration because it does not have to com-



Louis Allis 30hp Adjusto-Spede on conveyor drive in United Parcel Western plant.

The combination of Electro-physical Engineering Co. leadership in inductively heated thermoplastic extruders and Lufkin dependability in gearing design has resulted in savings for the plastics industry.



sate for hard starts and can be more sensitively set to protect the conveyor against jams.

The Adjusto-Spede, manufactured by the Louis Allis Co., Milwaukee, Wis., requires little maintenance and no replacing of slip rings, brushes, etc. The drive's electronic control unit can be overhauled without delaying the conveyor's operation, by making a block removal and replacement in the control unit in less than three minutes.

## Dependable gearing in extruders wins plastics acclaim

THE COMBINATION OF EPE leadership in inductively heated thermoplastic extruders and Lufkin dependability in gearing design is resulting in savings for the plastics industry.

Electrophysical Engineering Co. was the first to introduce to the plastics industry, a fully low frequency (60) induction heated thermoplastic extruder. The fundamental characteristics of low thermal inertia and high energy delivery capability combine to yield an extruder which reduces start-up and shut-down scrap as well as low running scrap, at high extrusion rates. The start up time from cold start to 450 deg. F. is 26 minutes for some units.

EPE extruders use Lufkin herringbone gear units as the drive transmission yielding a superior unit. Lufkin was selected for their performance record of years of trouble-free dependable service in the oil fields, under the severe torque cycling of oil pumping units.

case history  
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## PUMPS FOR INDUSTRY



### YEARS OF SERVICE

...for fifty years Pacific Pumping Company has consistently improved pump design and pumping efficiency. A continuing program of research, standardization and sound engineering has earned recognition as "The Best in the West."

### ...and now PACIFIC SUBMERSIBLE NON-CLOG SEWAGE PUMPS

#### COMPACT AND EFFICIENT SEWAGE EJECTORS

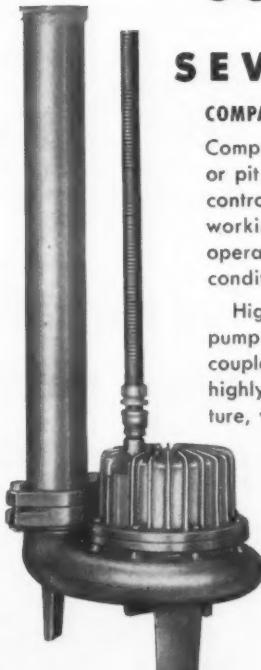
Complete pump-motor unit lowers into sump or pit and operates under water. Electrode controls and automatic switch install below working surface. Designed for continuous operation under extreme heavy duty or flood conditions.

High efficiency Pacific Non-clog sewage pump with choice of single or 2-port impeller couples to factory sealed motor filled with highly refined dielectric oil—seals out moisture, vapors, corrosive gases and abrasives ...seals in lifetime lubrication.

Wide range of sizes and capacities.  
Installs in any position,  
and in every type of pit.

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...for more details, circle No. 37 on Reader Service Postcard



Raybestos-Manhattan Poly-V belts solved the pull, slip, slip problem at Mountain Copper.

## How to take out the pull, slip, slip from conveyors

PULL-SLIP, pull-slip, was becoming a familiar rhythm to operators on the load conveyor at Mountain Copper Co., Redding, Calif.—until they installed a Poly-V belt.

Now, the dusty, abrasive location of the conveyor is the same, but the steady surge of power along the entire length of the drive belt is a welcome new feature.

Poly-V belts combine the simplicity and strength of flat belts and the grip of V-belts. And they afford greater interchangeability, more speed ratio with stock sheaves, higher hp. capacity with same sheave widths as other drives, higher flexibility and longer life.

After almost two years of operation, the spare belts which Mountain Copper cautiously ordered from Raybestos-Manhattan, Inc., Passaic, N. J., manufacturer of Poly-V belts, are still on the warehouse shelf, with original drives still working perfectly.

case history  
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## Oil & gas combo in this boiler means big savings

A 100 hp. COMBINATION oil and gas fired boiler is saving Simmons Hardwood Lumber Co., Los Angeles, 40% in operation costs—and it's helping fight smog, too.

The company, which specializes in high grade domestic and foreign hardwood lumber, prides itself on an outstanding dry kiln operation which requires high quality steam. With its previous installation, steam was not up to required standards.

Now, with the boiler manufactured by the Cleaver-Brooks Co., Milwaukee, Wis., the Los Angeles company has:

A forced draft system for quieter operation.

A single motor running both the burner and compressor.

High flu gas velocity and 80% less tube cleaning.

A swing door exposure for quicker tube cleaning.

Fire proof switches.

And a variety of other features which all add up to a lower cost operation and higher quality results.

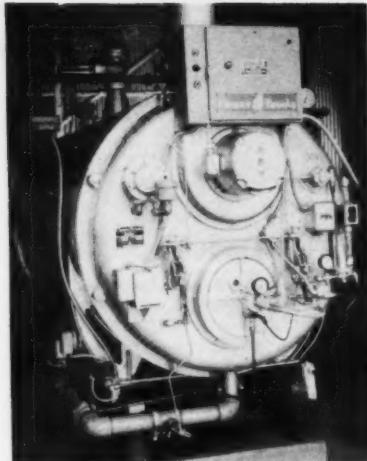
## Two-way radio obtains maximum equipment efficiency

TWO-WAY RADIO is being used at the Larson Ladder Co. plant in Santa Clara, Calif., to obtain maximum efficiency from mobile material handling equipment.

It was found that the mere presence of mechanical handling devices was not automatic assurance that full utilization of such devices would result. Idle equipment does not produce work.

But, with adequate communication between supervisors and operators of material handling equipment, maxi-

case history  
49



This combination of gas and oil adds up to 100 hp. for this efficient boiler.

mum efficiency of both machines and manpower is being realized.

Two-way radio was chosen in preference to other forms of communication since each operator could be reached personally anywhere in the entire plant area and at any time.

Five fork lift trucks have been equipped with low power industrial radio-telephones in neighboring Palo Alto. Each radio unit, known as the IMP (industrial mobile phone) has a communicating range of approximately two miles, which is more than adequate even for very large plant areas.

These radio units are unique in that they may be operated from the vehicle battery or house current without modification. No external power converters are required.

The same radio units, manufactured by Kaar Engineering Corp., may also be used in offices and are directly interchangeable with each other.

## Electric power solves problem in food warehouse

ELECTRIC-POWERED lift trucks are preferred by the San Francisco Warehouse Co. because green coffee must be handled indoors and fumes from gasoline would affect the coffee flavor.

Also, the company has found out that batteries have been found to have an average life of 96.6

case history  
50

months, or more than eight years, in this operation . . . and there is valuable saving due to the reduction in downtime when the trucks are being operated.



This Exide-power battery truck is solving a big problem in a green coffee warehouse.

In 1948, when the cost study was begun, the company had six electric

and five gas trucks operating in its warehouses. It now has 13 electric, eight gas and one gas-electric truck operating in its two locations.

An added increase in handling efficiency came with palletization. In unloading coffee sacks from ships, 16 to 20 sacks weighing from 133 to 175 lb. each are piled on pallets and stacked two pallets high—making a load of almost 6,000 lb.

## Small size motor has the pep, saves on shipping, service

WANT TO SAVE enough on shipping costs to cover the warranty reserve on your product?—that's just what

### case history 51

Magna Power Tool Corp. did with the design of a multi-purpose power tool for home-craftsmen. But not without headaches.

Problem—obtain a fractional horsepower motor that could be built into the machine. All power tools had previously been sold



Bill Martin, General Electric Co. sales engineer, shows special GE motor which solves this Magna Power Tool Corp. problem.

with the motor extra. Incorporating the motor in the tool posed problems of space, weight, serviceability and performance.

Efforts to find a solution resulted in a new motor that is 4 lb. lighter . . .  $\frac{3}{4}$ -in. smaller in diameter . . . and gives 50% more horsepower than the previous motor used.

And the smaller motor has reduced costs in both servicing and shipping.

It's name? Shopsmith, and its a product of the joint effort between General Electric's motor division and Magna's engineering and procurement and planning staff.

## EXTRA HEAVY DUTY Air & Hydraulic Cylinders

New design eliminates usual weak points

- ★ NO TROUBLESOME TIE RODS OR SNAP RINGS
- ★ CAST STEEL CYLINDER HEADS, "O" RING SEALED. NO BROKEN HEADS OR CLEVISSES.
- ★ POSITIVE CUSHION CONTROL. NO BANGING CYLINDERS.
- ★ LONG LIFE. DISMANTLES WITH ORDINARY TOOLS.

Standard or  
custom made

DEALERS WANTED

REMCO MFG. CO., Box 658, Dept. WI, Petaluma, Cal., Phone POrter 2-6615



Dependable  
**TELESCOPIC  
CYLINDERS**

2-5 stages  
3-40 ton capacities

Dumps 22 tons of sand from dump truck in 28 seconds!

**RODPAK METALLIC PACKING**  
made by REMCO and used  
in REMCO products

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## PAYOUT PROVED:

Paul S. Radford, prominent San Pedro, California trucker moved 65,000 tons of rock in one month to the Redondo Beach Breakwater using 3 White Model WC2264 OH dual-drive trucks, equipped with cable dump trailers.

For the full measure of hauling profit—specify

# WHITE TRUCKS

Better your own hauling score! Learn how so many western truck operators trim hauling costs and produce greater profits with the switch to White Trucks. White offers an efficient combination of engine, axles, transmission and frame to fit any transportation requirement. Top payloads invariably result! Your White Representative has actual facts and figures, so why not call him right now!



Radford prefers rugged off-highway jobs, and his Whites are built to take the most rugged. Not only does the White and cable dump trailer produce extra payload advantages, but it offers maneuverability in close areas unobtainable with other types of equipment.



Radford's gasoline-powered Whites are equipped with 15 yard Fruehauf Cable Dump Trailers... give him a 22½ ton legal payload! Radford chose Whites for their double frame construction, and for their engine and gear arrangement best suited for his unusually rugged hauling.

THE WHITE MOTOR COMPANY  
CLEVELAND 1, OHIO



Factory Branches, Distributors & Dealers Everywhere

FOR MORE THAN 55 YEARS THE GREATEST NAME IN TRUCKS

... for more details, circle No. 39 on Reader Service Postcard  
WESTERN INDUSTRY — January 1958

# MAINTENANCE METHODS AND PLANT SERVICES

SECTION 4—WESTERN INDUSTRY'S 1958 COST REDUCTION IDEA-BOOK

## Found: white grease solving every problem in lubrication

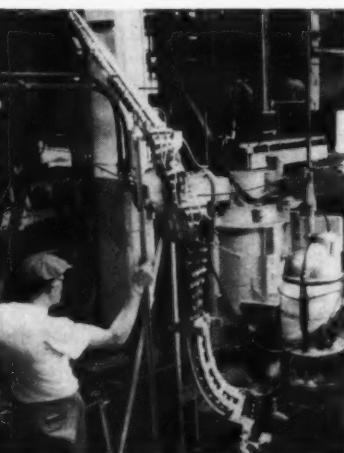
**WANTED:** Grease that not only reduces wear and friction between moving parts, but resists steam, water, rust and oxidation . . . Must be immune to corrosion, even to the chemically destructive tendencies of fruit and vegetable juices . . . Must not impart any odor or flavor to canned foods . . . Must be non-toxic.

**PLEASE** supply in white!

The food processing industry issued quite an order when they asked for all of these qualities to be incorporated in a single lubricant. But the search began.

The finest lubricating oils, chemical additives that would fortify against moisture and acids, and a soap base into which the oils and additives could be compounded with stability, were tested.

Some of the largest California canneries lent their cooperation and began applying the new product to the wid-



Union Oil Alba grease does the job and is non-toxic to foods and liquids.

**case  
history  
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est possible variety of food-processing machines.

It satisfied every requirement the canners had specified. It was almost snow white. And in one important test it exceeded expectations.

In a tomato-byproducts canning operation, it had been necessary to replace the bearings in seamer (lid sealing) rolls every two or three weeks. Application of the new grease extended the life to two or three months.

In one seven-week test, only five bearings were replaced. The normal expected replacement was 200 bearings!

The name of the Union oil product is Alba grease. In the container it looks just as good as vanilla ice-cream. And if some day a tiny molecule accidentally tumbles into your dish, don't worry—it's white, non-toxic, perhaps even nutritious!

## Walnut shell blasting removes obstacle plaguing electricians

REMOVING insulating varnish from internal fits after baking had plagued electric motor manufacturers for years

until the Westinghouse Electric plant at Sunnyvale discovered air blasting with walnut shells cut a generous 45% off cleaning time.

Most manufacturers completely immerse the frame, stator and coil assembly in insulating varnish several times, with a baking operation between each dip, coating the bracket fit with a baked varnish film.

**case  
history  
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Before coating, the bracket fit is machined concentric with the stator iron and the bracket spigot machined concentric with the bearing housing. It is absolutely necessary that all foreign matter be removed from the fits, or misalignment of the motor will occur.

Previously, varnish had been removed by applying a stripping material by brush to the frame fit prior to the varnish dip. After dipping and



Air blasting in Vacu-Blast Co. unit removes insulating varnish from fits.

baking hand scrapers and small rotary wire brushes were used to remove the varnish film.

Great care had to be taken by the operator not to damage the coils, which can easily be done with a single slip, and which necessitates stripping the stator, inserting new coils, redipping, rebaking and recleaning—a lot of extra work.

The new unit, developed by the Westinghouse Sunnyvale plant, working with Vacu-Blast Co. of Belmont, Calif., employs the use of a soft abrasive and a recycling, air-pressure blast generator-reclaimer unit.

The air-blast permits the direct impingement of a high-velocity stream of soft abrasive on the varnish film at the fits without direct contact by a metal object.

Walnut shells are used as the soft abrasive because they remove the varnish film very quickly on direct impact, but are inelastic, have low inertia and will not remove varnish film on nearby coils.

# Metallizing of beams prevents concrete cracking or spalling

CRACKING or spalling of concrete was one real problem facing the designers of the Mormon Temple at Santa Monica, Calif.

## case history 54

They had two alternatives: apply a sufficient thickness of concrete over beams or rods so that moisture could not seep through

and rust them, or, coat the steel itself with some rust proof metal such as zinc.

Concreting meant unduly heavy construction, so the latter method was used with metallizing as the means of application.

Two steps were followed—the fabricated steel was sandblasted with a good angular abrasive, removing scale, dirt, and providing sufficient roughness for proper bonding of the metal.

Next, the operator applied .005 in. of pure zinc. No heat, flux or finishing was needed.

Almost 100,000 lb. of beams and rods were metallized by Crankshaft

Grind and Metallizing Co. of Salt Lake City, and used in the solid and honeycomb tilt-up concrete slabs. By doing this, the engineers were able to reduce the total slab thickness by 2 in. If the steel had not been protected against corrosion it would have been necessary to have 1 in. more concrete on each side of the reinforced beams.

Preparing beam for metallizing by application of Sprabond prevents cracking or spalling.



A 37-in. Lincoln Auto-Scrubber and one man does the job of 20 men in this plant!

## One man will do—where 20 men had a hard polishing job

PROBLEM—If it takes 20 men to polish 5 miles of floor space with single disk polishers, how many men

will it take using modern auto-scrubber machines?

Answer—one man on each of 4 shifts.

Conclusion—a bundle of money is being saved on maintenance.

In the new 1,150,000-sq. ft. Mercury Assembly plant of Ford Motor Co. at Rivera, Calif., nearly five miles of aisles are maintained daily. And only one operator with a 60-in. auto-scrubber is required on each shift to do what it would take a crew of 20 men to accomplish with ordinary single disk floor machines.

Even greater savings are possible in smaller plants, such as that of the Whittaker Gyro Division of Telecomputing Corp.

This precision manufacturer of gyroscopes for missile instrumentation operates a dispersed plant at the Van Nuys, Calif., airport. An aisle area of 2,735 sq. ft. in five separated buildings is maintained nightly with a crew of six men.

Prior to use of an 18-in. Lincoln Auto-Scrubber, distributed by the Columbia Floor Equipment Co., a 13-man crew was required for this work.

During the two years the new machine has been in use it has logged 750 operating hours—an average of three hours nightly required to equal the work of seven men!

## Glare-free lighting brightens picture at iron works plant

GLARE-FREE LIGHTING is brightening the production picture at the Trulove Iron Works in El Segundo, Calif.

When the firm built its present plant, fiber-glass panels were used for sidelighting and skylighting. Money—\$75 per opening

## case history 55

—was saved on construction costs, because Filon plastic nested with the corrugated metal and could be nailed up without using any sash at all.

Previously, conventional glazing of the light source had never been entirely satisfactory, since it supplied some areas with intense, glaring light, while other areas were in shadow.

As a result, artificial illumination was needed throughout the working day.

Now, because of the panels manufactured by Filon Plastic Corp. of El Segundo, evenly diffused light, with no glare or shadows, is assured. Eleven 150-watt floodlights were also installed, but the light delivered through the panels has been so satisfactory that after two years the floodlights have yet to be used during daylight hours.

Think of the savings in light bills, and no burned-out globes to replace, either.

Filon plastic panels were installed at low cost to provide adequate lighting throughout.



# Cutting production from 8 to 1 hours, upping output 99%

## case history 57

PRODUCTION TIME per pump lining has been cut from 8 hours to one hour, and acceptable output increased 99% by Dorr-Oliver, one of the West's largest pump manufacturers—by using transfer moulding.

Previously, most pump parts had been lined by hand, a laborious operation which was not only costly but offered little assurance that the finished job would be acceptable.

Many rubber-lined pumps are used to move chemicals and slurries corrosive to metal. The slightest break in the lining could cause pump failure in a short time.

All linings are spark tested electrically to discover the smallest aperture. Unless the lining passes the test, it must be stripped off, discarded and the pump re-lined. With hand lining, failures were a common occurrence.

Experiments were conducted by Oliver Tire and Rubber research engineers for nearly two years with promising new methods and special rubber formulas.

Finally, the transfer mould method was developed, where the entire casting is placed in the mold and lined. Critical control of heat, steam, rubber and pressure is absolutely necessary to insure an acceptable lining and to prevent pump breakage.

Results?—production time cut sharply, overall costs reduced substantially and acceptance increased to 99%.

Transfer molding developed by the Oliver Tire & Rubber Co. has made productivity soar.



## CASE HISTORY



Production Manager Ray Meyer inspects finished magnetic drum with Roy Skeirik, manager of Electro-Mechanical Production Section, for ElectroData Division of Burroughs Corp.

## SprayKing dust-free spray booth helps ElectroData improve quality control 300%

**The problem:** How to apply special magnetic dispersion paint to the surface of a cylindrical data storage drum. Each drum, the heart of a Datatron 205 electronic computer, is the memory unit capable of storing some 40,800 characters of information on its magnetic surface. The finish is extremely critical—dust particles, varying paint thicknesses, and poor overspray control were factors which sometimes prevented drums from meeting ElectroData's rigid quality standards, according to Production Mgr. Ray Meyer. A second concern was noise, since precision assembly areas were nearby. **Solution:** SprayKing's Model DI-1077 floor booth equipped

with two-stage air filters in the doors.

SprayKing engineers also recommended installation of Superclean paint arrestor pads to catch overspray and insure even paint application on the drum. Results? "Efficiency of drum production has increased three-fold, due principally to our improved finishing techniques," states Meyer. In addition to improved lighting and ventilation, Meyer also notes near-silent operation as an important benefit of the SprayKing booth.

SprayKing equipment and engineering experience can solve your product finishing problem, too. A representative will be happy to call at your convenience.

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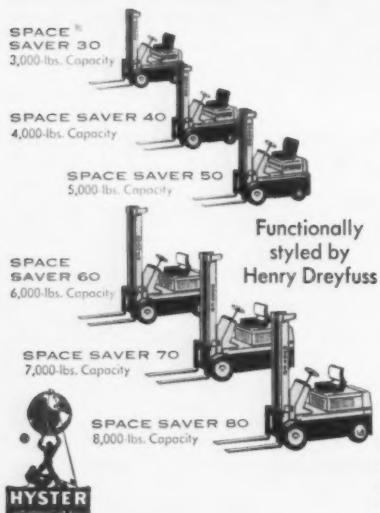
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ERNEST G. SWIGERT, President, Hyster Company



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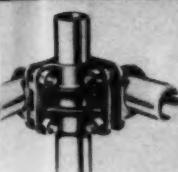
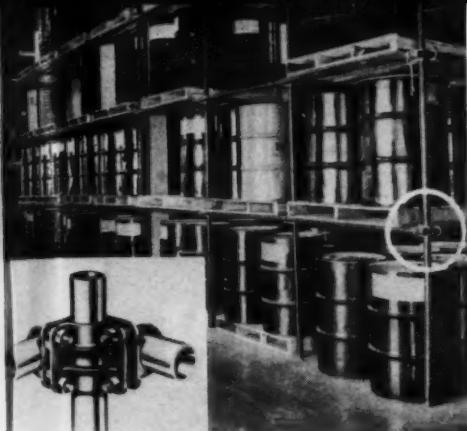
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WESTERN INDUSTRY — January 1958



Tube-Strut universal clamps (as shown in insert) were all that were required in these racks built by Turco's personnel.

## Boost space savings as high as 25% with storage racks

SPACE SAVINGS are as high as 25% at Turco Products, Inc., plant in Wilmington, Calif., since they constructed storage racks four openings high instead of three, which is the height normally used.

During the year, a total of 200 lineal feet of racks were constructed by the com-

case history 58

structured storage racks four openings high instead of three, which is the height normally used.

pany's own personnel. Made of 1½-in. pipe providing a beam load capacity of 5,000 lb. in each pallet opening, the 200 feet of racks provide 46 bays, each with four openings, making a total of 184 bays in 200 lineal feet of storage rack.

At first, the company was concerned about the additional handling time required by fork lift operators in stacking pallet loads four high. But by placing only the slower moving items on top sections, this became a negligible factor.

Should storage space requirements change, it will be quite simple to make additions to the racks, since ordinary pipe is usually carried in stock by most industrial concerns as a maintenance item.

All that's required are Tube-Strut universal clamps, manufactured by Tube-Strut Corp., Los Angeles, Calif.

floor with interchangeable panels was decided upon, made up of 24 x 48-in. fir plywood panels 1½ in. thick.

Bought precut from the mill, the 2 x 4-ft. sections were fabricated in Berkeley and delivered to the job ready to install. One-eighth in. grey vinyl tile in 12-in. squares was pre-applied to panels by the tile subcontractors, and bonded with cement.

For fireproofing purposes, 20-gage sheet metal was secured to the underside of each panel with screws. Panels were drilled in the shop to take six bolts each for securing them in place. A jig was set up to drill three holes at a time. Holes were counter sunk and drilled to 1¼-in. diameter to take ¾-in. stainless steel bolts and washers.

Floor panels were installed over steel joists 24 in. on center, 12 in. above actual floor level for ventilation. The joists, with top flanges for drilling, rested on concrete sills.

As each floor panel was installed and wedged into position, holes were drilled and tapped into the flanges of the joists. If it becomes necessary for PG&E to move their IBM equipment after installation, it will be simple to pick up the panels.

The whole floor area under the panels will be kept air cooled, keeping the wiring from over-heating.

Berkeley Plywood Co. used a five-man crew to do the job. One man was able to lay 200 panels a day, completing the first 80% of the job in seven working days—which included drilling and tapping for 7,500 bolts.

Floor panels installed over steel joists 12 in. above actual floor level so under area can be free for ventilation and wiring.

case history 59

## Building a floor above a floor with plywood panels

THERE ARE floors and floors—and the Pacific Gas and Electric Co. in San Francisco wanted two kinds . . . a basic concrete floor and, 12 in. above it, a sectional floor with panels.

When the company took over an entire eighth floor, 8,700 ft. of it, for its IBM department, a sectional



## Valve service upped 700% using packless diaphragm valves

VALVE SERVICE has been increased 700% at the Liquid Carbonic Corp., Seattle, by using packless diaphragm valves to handle potassium permanganate in lines to scrubbers.

Before installing these ½- and 1-in. valves, this dry ice plant had to replace valves of another make at least every



Before using Crane valves, Liquid Carbonic Corp. had to replace valves every six months.

six months. Constantly recurring leakages around stems called for frequent stuffing box maintenance and hindered operations.

After changing to packless diaphragm valves, there has been no leakage, no trouble of any kind in 3½ years.

Here's why.

Packless diaphragm valves completely eliminate the need for stem packing and the problems of stuffing box leakage and maintenance. The diaphragm, manufactured by Crane Co., Chicago, seals the bonnet from line fluids.

## Automatic lubrication doubles ring life, cuts oil consumption

DOUBLED RING LIFE in spinning frames—oil consumption cut to one sixth of former requirements—improved AND increased production—better housekeeping—elimination of product spoilage by oil—no slippery floors.

These are just highlights of benefits reported by Portland

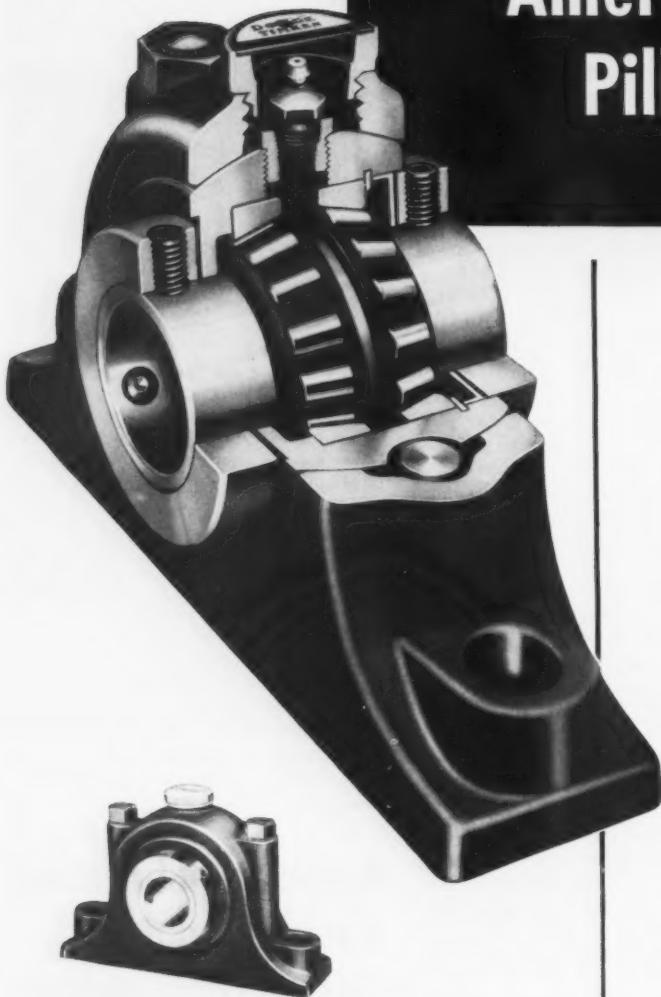
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To meet varying service requirements Dodge-Timken Pillow Blocks are available in five types—the type E.. Double Interlock (illustrated).. Type C.. Special Duty ... and All-Steel. Available in a range of shaft sizes from 1-3/16" to 10".

Call your Transmissioneer; or write for Bulletin A638 giving load ratings, dimensions and other data on Dodge-Timken Roller Bearings.

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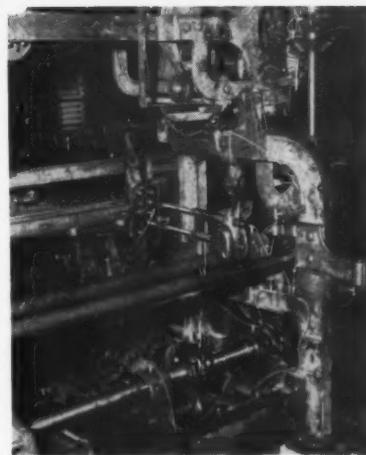
WESTERN INDUSTRY — January 1958

Woolen Mills, Inc., a year after switching from hand oiling to automatic lubrication in the spinning room of the Portland Mill.

As a result of profitable experience in the 30-frame spinning room, the company is presently in the process of installing Alemite "Accumite" automatic centralized lubrication in the first of the mill's 80 Crompton & Knowles 92-in. Model W-3 automatic looms.

Formerly, lubricating was done by hand, with an oil can, whenever the operator "thought of it." Over-oiling often resulted in damaging the product as well as creating hazardous working conditions.

The new system eliminates a need for wicks and rings; the valves oil directly into the rings. Wicks used to fill up with dirt, losing their capillary action and letting the rings run dry. Then—downtime! And new rings cost \$2.65 each, while it costs only 40% of that amount to put centralized valves



Just part of the intricate mechanism lubricated by the Alemite system.

on a ring, when the entire frame is equipped.

Centralized lubrication is here to stay—and Portland Woolen Mills are glad of it.

## Production increased by 25% with well planned lighting

YOU NEED MORE than good eyesight to see extremely small, shiny parts, and wire less than one mil in diameter, with tolerances down to .0002—  
you need well planned lighting, too.

Production increases of almost 25% were achieved by the Heli-pot Corp., manufacturers of precision electronic components in their newly constructed plant at Costa Mesa, Calif., after they solved previous lighting difficulties.

In their existing plant they were operating with about 50 foot-candles of general illumination in some places, resulting in bad shadows and a lot of reflected glare.

Smoot-Holman lighting fixtures brighten this production picture at Heli-pot Corp.



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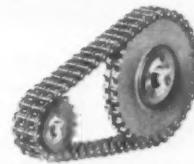
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### TAPER-LOCK SPROCKETS

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## Proper lubricant halts heating of bearings, switches

BAKING BREAD is a hot business—and it's hard on bearings and lubricants.

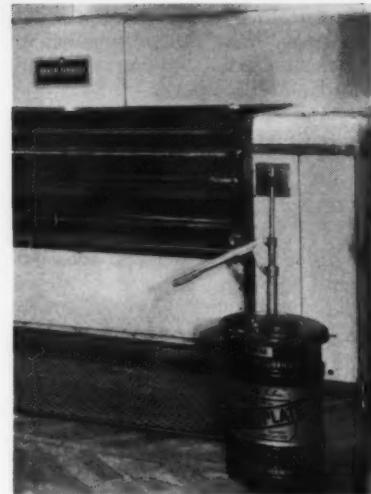
**case  
history**  
**63**

Kilpatrick's Bakery in San Francisco was spending real money on replacing bearings and scorched switch parts—until it standardized on Lubriplate grease.

Results were immediate.

Bearing trouble was eliminated and the lubrication system simplified. Life of switches was increased by coating with a tough film of Lubriplate to prevent excessive wear.

Kilpatrick's found that No. 630 AA Lubriplate was best for ovens, while No. 4 was used on the oven loader chains, previously lubricated four times a day and now reduced to three



This Lubriplate system is taking the heat off the lubrication problem at Kilpatrick.

times a week—and it did away with carbon deposits on these chains.

Manufactured by Fiske Bros. Refining Co. of Newark, N. J., Lubriplate has eased production problems in many Western applications.

## L. A. packing house licks smog with electronic precipitator

SMOG is losing out in Los Angeles. Meat packing houses have turned to electronic precipitation equipment for the most economical and effective method of eliminating escaping smoke from their smokehouses—with 99% success!

Over 35 meat packing houses were contributing 3,000,000 cu. ft. per hr. of smokehouse effluent into the atmosphere. This gas contained 650-700 lb. of particulate matter.

With a combination of Roto-Clone and a model S Electro-Cell all but 1%

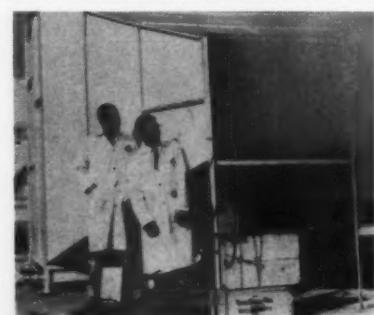
—yes, 1%—is removed before it leaves the stack.

The Roto-Clone removes the heavy vegetable oil and fatty acids from the gas stream, while the model S Electro-Cell removes the smoke from the air.

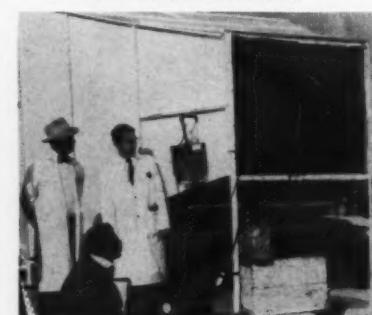
The equipment was tested for two years on top of the smokehouse of the Luer Co. in Los Angeles. An independent laboratory substantiated American Air Filter Co. engineers' claims that 99% effluent elimination was possible.

As a result, orders from thirteen other Los Angeles meat packing houses have been booked—and it looks as though Los Angeles residents will soon have the luxury of clean air.

Before the Roto-Clone was turned on . . .



After the Roto-Clone is on.



# This is the end — to your problems of laying cables

## THIS IS THE END.

How simple can cable laying get? For a leading oil field equipment and engineering firm, not very. In running power lines from temporary generators to various locations around a drilling rig, cables were simply laid

on the ground, while equipment rode over it. It was only a question of a little while before the cables were literally buried in muck with tractors, trucks, and bulldozers moving constantly over them.

After using this method for over a year, no service interruptions or ruptures were reported, and despite unusual wear and tear, the cables remained usable on other locations.

Previously, cables were strung on poles of sufficient height to permit traffic to pass underneath. Now, with costs cut by dispensing with overhead cable supports and labor and materials that went into building them, Bronco 66 cables are becoming the order of the day for drilling equipment firms.

And for Western Insulated Wire Co., Los Angeles, manufacturer of the tough cable . . . this is only the beginning.

## Plastic, glass cloth team up for overhaul of truck body, floor

RESURFACING the floor of its delivery truck with plastic material and glass cloth saved Furane Plastics, Inc.,

65% of a complete truck body and floor overhaul.

The overhaul, involving replacement of wood structural members and repairs to immediate metal structures, would have cost close to \$200 per small truck.

But after using patching and repair resins and glass cloth to resurface the existing floor structure, flooring of the

### case history 66

truck was as good as new 18 months later, in spite of almost daily abuse with heavy barrels weighing up to 600 lb.

Cleaned easily by washing down with water, the inevitable splintered floor surface of the common wood flooring has been eliminated, and the advantage of smooth, low friction plastic surface achieved.

In application, severe cracks and badly splintered areas of the original truck flooring were repaired and patched with a strong, non-shrinking paste, Epibond 104.

Wood surfaces were primed with



Furane Plastic, Inc., using Epibond 104 to patch cracks in floor of the truck.

Epocast 12B and faced with glass cloth and Epocast 2D.

The final article, wood faced with

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an epoxy resin and glass cloth, will long outlast any wooden truck bed, if present standards hold true.

## Saving time, money by reclamation of dust and scrap

SCRAP WAS COSTING the Los Angeles plant of Gladding, McBean & Co. the equivalent of six non-producing workers. Raw material estimated at \$30,000 a year was being carried off the scrap dock or floated through the air of the plant and surrounding areas.

Since the firm manufactures ceramic veneer, tile and vitrified clay pipe, a lot of dust was involved by dumping of raw materials, grinding of pressed tile and other processes. The amount of dust was enough to require workers to wear masks, and grinding tile only added to the house-keeping problem.

Then there was scrap green tile.

This is a dry tile body with a moisture content of only 7%. Much of it is discarded because of poor quality, but, because it has not been fired, it can be pulverized and remixed into slurry. However, pulverizing simply added to the dust problem, and as a result, this saving was not being carried out.

As much as 8,000 lb. of green tile body was being consigned to the scrap dock each day. Men using hand trucks handled as much as 40 barrels a day, or 84 tons a month at \$28 a ton.

A solution had to be found.

It came with the installation of cloth bag-type dust collectors. Five of them were located at strategic points throughout the plant, collecting 99% of the dust in a dry state so that it could be reused.

Transfer of the scrap was solved by attaching barrels to four caster dollies so it was possible to hook them in series of from 6 to 8 and move them as a unit to the pulverizer. An automatic dumping machine transferred scrap from the barrels to portable storage bins, which are then moved by fork truck to an elevated platform, from which scrap flows by gravity to a 16-in. wide conveyor belt which takes it to the pulverizer.

The finely ground powder moves from the pulverizer on another belt

conveyor to the blunger where water is added and the tile slurry mixed.

This entire operation is ventilated by a model 70-A No. 8 Wheelabrator Dustube collector, manufactured by the Wheelabrator Corp., Indiana.

Hoods located at the dumping station, pulverizer and along the conveyor make it a dust free operation. The collector, operating at 2,688 cfm., has hoppers capable of holding 900 lb. of dust. These are emptied twice a week with the material routed directly to the blunger.



In the background is a Wheelabrator Dustube collector which ventilates the five grinding machines in the wall tile department.

Savings from this one reclamation job alone, amount to \$2,550 a month at peak production. Within six months, savings more than paid for the material handling set-up. And a reduction of one man was possible in the barrel train operation.

## "Startling results" obtained with an absorption filter

VERY STARTLING RESULTS were obtained when an absorption filter was installed at Cannon Electric Co. in Los Angeles.

The company had a problem . . . their electrical connectors are used in places where they are exposed to corrosion. Tests are constantly being conducted to develop experimental equipment in corrosion research, but the air used in this test equipment is ordinary plant air—with

case history  
68

a vaporized content of lubricating oil present.

*Question . . .* how to filter the oil out of the air?

*Answer . . .* a "Staynew" model AA-9639 absorption filter made by Dollinger Corp. of Rochester, N. Y., was installed.

It had a dual operation. First, by deflection it directs the air at high speed to the base of the unit where oil, water and solid particles are automatically separated.

Second, the air passes at low velocity through highly absorbent felt pads to complete the filtration.

Result . . . after one week the problem of oil-free air was so completely solved that a second filter was purchased and installed in another corrosion test chamber.

## Repair shop achieves ventilating, heating at the same time

VENTILATING AND HEATING can be done at the same time. Proof?—look at Union Pacific's new \$6,000,000 diesel locomotive maintenance and repair shop at Salt Lake City.

Designed to handle every type of maintenance from light servicing to complete overhauls of diesel motive power units, the shop is reputedly the largest steel-insulated building of any kind.

Heating is difficult because of its high roofs, and a large amount of ventilation is needed to remove toxic diesel engine fumes.

To get rid of the fumes, a series of hoods connected to power roof ventilators were placed over each diesel unit service track. Ventilators may be operated singly or in banks, while other power ventilators, not connected to the hoods are placed around the roof to pick up stray fumes.

In all there are 109 ventilators, each handling 12,000 cfm.

All heating is sectionalized, there is no general circulation system. Steam is piped from a boiler plant outside the building to unit heaters where warm air is directed by motor-driven fans into each section.

In shop areas, 43 heaters each deliver 14,000 cfm.

Trane projection heaters are mounted near the ceiling over the

case history  
69

**CM Lodestar®**

ENTIRELY NEW  
differently NEW



### FEATURING:

- Push Button Control
- Ultra-Modern Regenerative Electric Braking
- Self-Adjusting Heavy Duty Magnetic Brake
- Sealed-in Lifetime Lubrication
- Overload Protection
- Fully Enclosed Components
- Lowest Headroom
- "CM-Alloy" Flexible Link Chain

CAPACITIES: from  $\frac{1}{8}$  to 1 ton. Single and 3 phase.  $\frac{1}{4}$  ton model weighs only 51 pounds.

\$161.45  
and up

F.O.B. Factory

### Built to serve you without costly maintenance

Lodestar is the first truly "heavy duty" version of the small electric hoist. The CM Lodestar is designed to operate without costly maintenance or interruptions in your work schedules. The initial cost is practically your only cost with a Lodestar... an extremely low cost indeed!

WRITE US or call your CM distributor for literature, prices and quick delivery from stock.

### CHISHOLM-MOORE HOIST DIVISION

Columbus McKinnon Chain Corporation

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**CM**  
HOISTS AND CHAIN

... for more details, circle No. 46 on Reader Service Postcard

# Tough Tape

for heavy-duty packaging!



PRESSURE-SENSITIVE SHUFORD'S SHURTape® RP-25 MEETS FEDERAL SPECIFICATION PPP-T-76

Cartons full of heavy parts or assemblies stay together when they're sealed with rope-paper backed Shuford's SHURTape RP-25.

Use it to seal V-Board and W-Board fibre containers . . . use it on individual parts to protect surfaces . . . or for banding and bundling.

Heavy-duty Shuford's SHURTape RP-25 has excellent resistance to water and abrasion, heavy adhesion and clean strip . . . serves many industrial purposes!

Ask your  
**ZELLERBACH PAPER COMPANY**  
Representative  
or write



World's Largest Manufacturer of Cotton Cordage

... for more details, circle No. 47

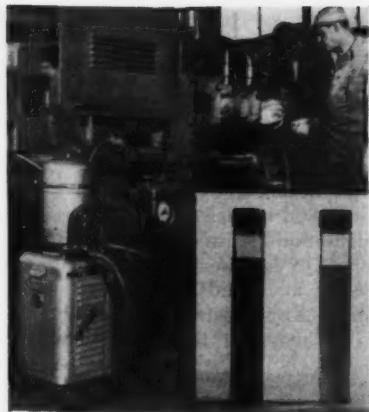
doors and direct a warm curtain of air by means of louver cone diffusers. These vertical discharge heaters also spread warm air to other shops as required. Winter temperature is kept at between 65 and 70 deg. F.

## Portable oil-solvent reconditioning unit stops abrasive solids

"BEST" is a byword at Pabcast, Inc. But although this company was using "one of the best" die casting machines and "one of the best" water-base fire-resistant hydraulic fluids, annoying and expensive problems were being encountered due to abrasive solids which were delaying production.

Now, thanks to a portable oil and solvent reconditioning unit, these problems have been entirely eliminated. And savings, with a big \$, are:

1. 40 hr. per month increased production (previously each of the 5 machines were down an average of 8 hr. per month for maintenance and



Model MBW-1 unit on hydraulic system. Insert shows before and after purifying.

servicing.)

2. 40 hr. of maintenance and servicing costs eliminated.

3. Smoother running machines.

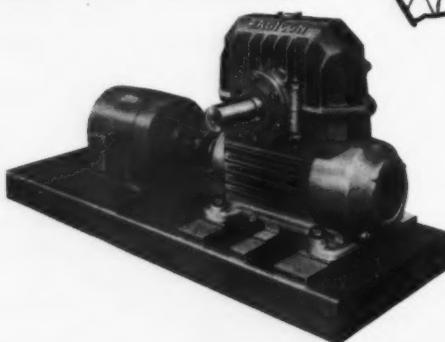
4. Savings in replacement pumps, cylinders, and valve parts by eliminating abrasive solids.

5. A clean, unadulterated fluid with a much longer life.

Equipped with a 5 micron sintered bronze element, manufactured by Mayhew Products Co., the element is completely inert and does not affect additives or the oil-water ratio. It is cleanable and re-usable by backwashing with a "special" flow control valve.

## ALMOST NOTHING TO DO...

### RADICON COMPLETE DRIVES



All Radicon drives are fully tested and inspected in our own fitting shop before shipment. When the Radicon complete drive is delivered (with all lubricants furnished) and ready to set — you've decided on the simple solution — Radicon, the best!

No need to buy reducers, motors, couplings — then spend time shimming and aligning. Eliminates a major part of your drive design problems — just position the efficient new Radicon complete drive, set six bolts, and you're ready to roll. Radicon reducers and motors are carefully shimmed and aligned on bed plates of heavy fabricated steel double box construction, firmly ribbed for rigidity. This means minimum stress at the flexible coupling . . . long service, low maintenance.



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... for more details, circle No. 48 on Reader Service Postcard

WESTERN INDUSTRY — January 1958

## Here's how to halt scale, corrosion from eating up \$\$\$

DID YOU KNOW that 9% of each recurring repair dollar is spent as the direct result of scale and corrosion?

### case history 71

At the Presidio Cleaners in San Francisco, a water conditioner has been installed that not only does away with the use of chemicals, but has

realized its cost in less than four months.

The conditioner operates on a principle in which the untreated water is directed over permanent Alnico magnets, changing the physical structure of the dissolved minerals and salts from crystals to amorphous powder. Which means they remain in suspension or settle out as a drainable mud.

Scale build-up is prevented and existing scale and corrosion gradually decomposes.

Previous treatment included daily use of one gallon of liquid compound at \$1.35 per gal., and quarterly boiler service at \$50.

Fuel consumption costs dropped as much as \$96 a month, as the boiler previously needed a continuous fire and now need be used only 45 minutes in each hour.

The Packard water conditioner, manufactured by Water Conditioners of California, Inc., has not only paid for itself in four months, but is a permanent, trouble-free installation requiring a minimum of equipment servicing by the operator.

## Battery changing down to science—at least 50% saved

CHANGING BATTERIES used to be a problem at Purity Stores in Milldale, Calif. But no longer. Now it

is done at least 50% faster, simpler and more efficiently—and it can be done without use of rollers or costly overhead handling equipment.

You see, the most common method of changing batteries has been through the use of overhead hoists

Also, the battery is securely locked

### case history 72

which requires an elaborate setup—complete with overhead I-beams and traveling hoists. This requires lots of space.

The new method involves the use of a steel tray battery with cover, plus two-in. high channels welded to the battery tray on the bottom.

A powered fork truck lifts a fresh battery and positions it into the truck being used. This saves space, as batteries can be double-stacked. Installation cost is less as there is no overhead equipment. And time per battery change is reduced as lateral and horizontal movements are at a minimum.



No fuss or muss as fork lift easily and quickly changes this C & D battery.



## Sometimes there's another approach...

Ordinarily you'd see a user of the microscope looking down. March of Dimes scientists use the microscope upside down to study the growth of viruses used in research on new drugs. Techniques adapted to the particular needs of medical investigations have brought us to the brink of a tremendous era in fighting disease and providing freedom from pain.

March of Dimes research on viruses and cells will be greatly expanded in the future, so that "leads" which promise hope may be tracked down by scores of determined scientists. From your contributions to the March of Dimes will come research the entire world of science is watching. And from this research should come new protection and new treatment of many ills that now plague mankind.

*Survival IS NOT ENOUGH!*



THE

**Join  
MARCH OF DIMES**

... for more details, circle No. 49 on Reader Service Postcard

in place by means of stops which are an integral part of the truck.

This time, cost and space saving method was developed by engineers from C & D Batteries, Inc., working with Purity officials. Purity Stores will operate 40 C & D batteries in its new warehouse.

Batteries are all C & D's new HC type, which has a 72 amp. hr. per positive plate capacity. The battery in the picture is an 18-HC-21 720 amp.-hr. battery.

## New valve slashes maintenance costs; increases production

OPERATION and labor maintenance costs have been halved and production increased at the Albers Milling Co., Hillsboro, Ore., by converting to automatic valves on can-filling operations.

Formerly, the level of the tank feeding meat-and-gravy to the can loading machine was controlled by a hand-operated valve, which required a full-time attendant to control the flow by visual observation.

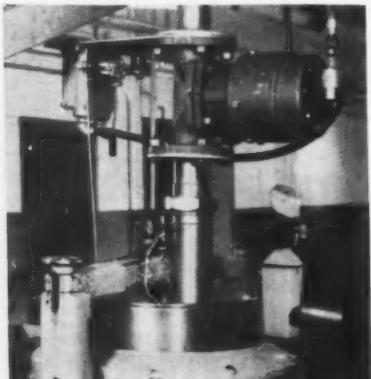
Now, an air-operated valve does this automatically.

Result—leakage is completely eliminated and valuable clean-up time is saved.

The valve is a Grinnell-Saunders diaphragm of three-in. stainless steel with a flanged end. An air-operated topworks controls the opening and closing of the valve 12 times per min., rapidly filling tanks to the required level.

A float in the tank trips a solenoid control that releases compressed air

This Grinnell-Saunders diaphragm valve does its work automatically... and doesn't leak.



76

into the topworks. Air pressure then opens the valve just long enough to fill the tank without overflowing.

When the float rises to the correct level, the cycle reverses and a spring automatically closes the rubber diaphragm against the weir of the valve.

This closes completely, even over pieces of meat in the line, and provides a pocket-free valve which prevents contamination of the product.

Because the diaphragm completely isolates the operating mechanism from the line, viscous fluids cannot get into the valve's bonnet to impair its operation, and lubricants cannot contaminate food products flowing in the line.

case history  
73



Scott paper wipers find many uses at this repair shop... as wiping oil from diesel parts.

## Dirt wipes off—not on with these disposable wipers

DIRT WAS BEING wiped on, not off, repaired parts at the St. Louis-San Francisco Railway Co. until they started using disposable paper wipers.

Cloths were being used beyond saturation point and often contained needles, pins, and other metal pieces which caused cuts and scratches when the cloths were used for personal wiping.

Now, paper wipers are used in cleaning diesel parts and equipment that have been dismantled for maintenance, as well as for cleaning electrical parts, wiping dust and grime aboard diesels and helping employees maintain personal cleanliness as a part of the shop's safety program.

Wipers are placed in handy wire

racks aboard diesels, and firemen use them for cleaning and wiping throttles, controls, and dial facings.

Perf-embossed surfaces of Scott wipers provide hundreds of tiny pockets that soak up oil and penetrate greasy deposits. Solvents may also be used with the wipers.

And the cost of Scott paper wipers also affords a saving. At a fraction of a cent a piece, they are more economical than cloth wipers which formerly cost 18 cents each and had to be laundered.

## Salt air, fumes can't harm coating of asphalt paint

PROBLEM... Economical protection of buildings, sheds and equipment of a widespread refuse reclamation plant.

Added Problem—The Sunset Scavenger Co., a co-operative salvage organization servicing 250,000 customers, is located between San Francisco Bay and the railroad shops and freight yards. Salt air from the Bay and fumes from chugging locomotives quickly play havoc with poorly protected structures.

*Solution*... Structural steel of the repair shop (the company operates a 100-truck fleet for collection), bottle washing plant, truck sheds, wash rack, wood ceilings, concrete ceilings... were painted with thick, Inertol asphalt paint.

Galvanized iron surfaces such as steel sash, metal doors, gutters, all unpainted black iron; exterior plaster of the bottle washing plant, as well as exposed exterior concrete block construction, office and meeting hall, were painted with Ramuc utility enamel over proper primers.

Interior wood surfaces got a coating of Glamortex enamel.

*Conclusion*—1,495 gallons of long-term protection.

PART II of our COST REDUCTION IDEA-BOOK will appear in the February WESTERN INDUSTRY. Yes, we have so many excellent cost reduction case histories on tap that we will print a second section next month. And we will bring you more time and money saving ideas in following months in our KNOW-HOW NOTEBOOK. Part I—all aimed at saving you time and money under Western plant operating conditions.

# 60 BEST FASTENER MANUALS

—yours for the asking (use postcard on page 99)

## 50-page tab-indexed stainless fastener book

A comprehensive stainless fastener stock list and data book divides into six sections on cap, machine and self-tap screws; set, wood and miscellaneous screws; bolts and nuts; washers, rivets, pins and studs; "AN" specs and pipe fittings; and a general section on engineering data with composition, properties, applications and weights of stainless steels. *Allmetal Screw Products Co., Inc.*

... for your copy, circle No. 250

## Description and use of 4,000 fasteners

Some 4,000 standard fasteners—set, socket and cap screws, hexagon nuts and related items—are described in a six-page fold-out which also explains the carbon restoration process. An accompanying pocket-size piece compares tensile strengths of heat-treated cap screws and mentions the specialized heat treatment that eliminates decarburization. *Chicago Screw Co.*

... for your copy, circle No. 251

## Precision bolts out of the blue

A 16-page book on aircraft bolts with the Nylok self-locking feature pictures a complete line of standard and special fasteners, including alloy steel and titanium flush head, six-digit, internal wrenching and 12-point external wrenching configurations. Charts and diagrams explain the self-locking feature with its compressible nylon pellet that keeps threaded fasteners locked in place under severe vibration. *Standard Pressed Steel Co.*

... for your copy, circle No. 252

## Self-locking nuts and bolts with nylon insert

Here's a pair of self-locking nuts and bolts that have something in common with stockings—those made of nylon, that is. These nuts and bolts have nylon inserts that form a vibration-proof, liquid-tight seal. Colorful and informative four-page brochure detail the properties and characteristics of these nuts and bolts, and spell out the torque qualities. *Republic Steel, Bolt and Chain Division.*

... for your copy, circle No. 253

## How to select self-locking nuts

A general booklet tells you what to consider when selecting a self-locking nut and produces three locking devices that meet all the requirements. Many product and application pictures pinpoint basic design principles and suggest uses. *Elastic Stop Nut Corp. of America*

... for your copy, circle No. 254

## 36-pages on variety of fastening units

Primarily a product and application picture book, this 36-page indicates design, construction and advantages of quick-lock, spring-lock, roto-lock, link-lock and dual-lock fasteners. Index and engineering data are included. *Simmons Fastener Corp.*

... for your copy, circle No. 255

## All about aluminum coated fasteners

Among recent developments in the fastener field is the aluminum coating process which gives fasteners a better resistance to corrosion. This eight-page book explains the process—coating temperature, appearance, uniformity—and discusses in some length various kinds of corrosion. Well illustrated. *Bethlehem Pacific Coast Steel Corp.*

... for your copy, circle No. 256

## Actual size photographs of 80 fasteners

An eight-page brochure furnishes more than 80 life-size pictures of fasteners for steel or concrete as well as showing fastening tools in simple 1-2-3 operation. A final page details channel and single-purpose guards. *Ramset Fastening System.*

... for your copy, circle No. 257

## Specs on foot and motor-operated staplers

A discussion of how foot and motor-operated staplers can speed production and cut costs opens this eight-page leaflet, which pictures several models in operation. Standard specifications and a chart of staple sizes conclude the book. *Bostitch.*

... for your copy, circle No. 258

## "Let's Nail Down Some Facts"

This eight-page booklet about threaded nails displays large detailed drawings of stronghold annular and screw thread and spiral thread nails, illustrating thread forms, clearance and other features that produce holding power. The final page shows a variety of nails for special applications. *Independent Nail & Packing Co.*

... for your copy, circle No. 259

## Guide to 24 threaded nails

This work shop reference chart, which you might tack on your wall, carries a cutaway illustration on the use of 24 different types of nails in the construction of a house and short text on the advantages of annular, screw and spiral threads, and a full-page specification chart. *Independent Nail & Packing Co.*

... for your copy, circle No. 260

## Complete literature kit on rivets

Among the literature in this cardboard kit is a valuable 10-page article on "How to Select and Apply Small Rivets for High Production Jobs," T. C. Buchanan; four pages of charts on compression rivets, and a general leaflet with selection, design data and specifications on several different types of commonly used rivets. A collection of loose leaflets pinpoints rivet setting machines. *Milford Rivet & Machine Co.*

... for your copy, circle No. 261

## Selecting and using wood, metal screws

The brief "Instructions for Selecting and Using Wood Screws and Sheet Metal Screws" shows how to measure wood screws and tapping screws and how to make pilot holes. The balance gives hole size recommendations in chart form for both types of screws. *J. Schwartzman Mfg. & Supply Co.*

... for your copy, circle No. 262

## Chart of tapping screw recommendations

This one-page chart lists kind of material to be fastened in its first column, then makes recommendations for fastening from five other columns on types of screws. *J. Schwartzman Mfg. & Supply Co.*

... for your copy, circle No. 263

## 16 pages on threaded tubular rivets

A data book for designers and engineers on Rivnuts, according to the manufacturer the only one-piece blind rivet with internal threads, explains how they work and where to use them. Different types are pictured, as are rivet tools. Engineering data and specifications complete the indexed booklet. *B. F. Goodrich Aviation Products Div., B. F. Goodrich Co.*

... for your copy, circle No. 264

## Nail literature kit with samples

You'll know which nail to hit on the head when you get this variety package with a 70-page pocket size notebook on every nail you can think of and then some; the latest information on gypsum board nails and a new development, the screw and ring shank nail. A four-page folder accompanied with eight sample nails, introduces this last. *Colorado Fuel & Iron Corp.*

... for your copy, circle No. 265

## 40 pages on springtites and sems

A loose-leaf notebook indexes 10 types of springtites and 14 types of sems, diagrams many and gives all pertinent information in easy-to-read chart form. The book shows step-by-step production of the units in picture form. *Reliance Div., Eaton Mfg. Co.*

... for your copy, circle No. 266

## Light weight but hard nut to crack

These self-locking nuts, according to a four-page notebook insert, can meet the weight-saving demands of the aircraft industry without sacrificing any fastening strength. Cadmium plated and available in five sizes, nuts are clearly pictured and briefly described. *Standard Pressed Steel Co.*

... for your copy, circle No. 267

## 32 pages on standard socket screw products

Complete with pictures and charts, this revised catalog reviews heat-treated alloy steel and stainless steel socket-head cap and set screws ranging from microsize to 12 in. long. Index also lists stripper bolts, flat heads, button heads, plugs, dowel pins and socket-screw keys. *Standard Pressed Steel Co.*

... for your copy, circle No. 268

## Socket screws with a "plastic memory"

The Nylok locking features serves as a "memory" in these self-locking socket screws, exhibited in a 16-page notebook picturing step-by-step insertion of the screw. Specifications, charts and recommended practices for the screws complete the book. *Standard Pressed Steel Co.*

... for your copy, circle No. 269

# CUT "CUTTING COSTS" . . . FAST WITH MAX 18" GENERAL PURPOSE ABRASIVE CUT-OFF MACHINE



**NEW! . . . COMPACT! . . . POWERFUL!**

The modern miracle of abrasive cutting of shafting, tubing, structurals, etc., can now be routinely performed in your own shop by means of this sturdy, proven, low cost Abrasive Cut-off machine, the new Max GP-18. Send for free literature.

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Head Assembly Swivels,  
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Assembly: Quick Acting  
Vise: 18" Abrasive  
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Guard: Belt Guard:  
7½ H.P. Totally Enclosed  
Motor, 3600  
R.P.M. 3220-440.60;  
Ball Bearing; Magnetic  
Push Button Starter  
with Overloads; Adjustable  
Tensioning &  
Depth Stop.  
Complete as Above  
\$1178.25

## Aircraft use of sealing-head Rivnut

High tensile and shear strength coupled with complete sealing are the characteristics of this sealing-head Rivnut that make it suitable for use on primary aircraft structure, according to a single-page notebook leaflet, which explains sealing action in two diagrams accompanied by text. *B. F. Goodrich Aviation Products Div., B. F. Goodrich Co.* . . . for your copy, circle No. 270

## Complete line of masonry drills, anchors

Here in a 32-page pocket-sized book is as complete a line of anchoring and drilling devices as you'll find for making fastenings to masonry. Pictured, sized and priced are lag screw expansion shields, bolt shields, anchors, toggle bolts, point holders, and drill points, to mention a few. The indexed book accompanies a descriptive sheet on the expander, a hammerless setting tool. *Arra Expansion Bolt Co.* . . . for your copy, circle No. 271

## Answers to questions about metal stitching

What materials can be stitched? What thicknesses? How fast is metal stitching? What about holding power? These are just a few of the questions that this eight-page booklet answers for you, at the same time picturing several stitchers with complete specifications. *Bostitch*. . . . for your copy, circle No. 272

## 16 pages on blind rivets, lockbolts

Two brochures, one on blind rivets, cherry rivets and versa-rivets, the other on commercial lockbolts, report how each works, installation data, specifications and pertinent facts on design. Suggested uses for all are listed. *Townsend Co.* . . . for your copy, circle No. 273

## Spec sheet for hexagon head cap screws

This notebook insert of four pages specifies sizes, types and list prices for hexagon head cap screws of the cold forged, bright or heat-treated types. Dimensions, weights of the coarse and fine thread series are given. *Wm. H. Ottmiller Co.* . . . for your copy, circle No. 274

## How to assemble safe-line clamp

Step-by-step instructions disclose assembling methods for the safe-line clamp, a two-piece grooved mechanical fastener for gripping rope. Those in the marine, quarrying, lumbering, aircraft, mining, construction and material handling fields will find this specification sheet handy. *Lamson & Sessions Co.* . . . for your copy, circle No. 275

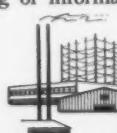


Save money with Empire steel buildings—One contract—all work guaranteed. 100% financing available also low-cost leasing. Buildings of any width, length or height. Quality at a price. Both rigid frame clear span and flat rise tapered girder designs; will support cranes and monorails.

Leak-free and rattle-free Empiresealed die-formed sheets roll and tuck under roof sheet; one-piece sidewall sheet eliminates end laps.

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STEEL AND CONCRETE CONSTRUCTION—TURKEY JOBS

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... for more details, circle No. 51 on Reader Service Postcard

78

**CHOOSE THE HELMET MOST  
PREFERRED BY WESTERN WELDERS**  
**HUNTSMAN**

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PROTECTION  
100% of the  
time**

**New Combination  
Hard-Cap  
Welding Helmet**



**NOW with new *ROTO-CLIP***

permits you to detach or attach helmet  
without removing Hard-Cap from your head.  
ORDER TODAY!

**KEDMAN CO., 233 South 5th West  
Salt Lake City 1, Utah**

... for more details, circle No. 52 on Reader Service Postcard

WESTERN INDUSTRY — January 1958

### 36 pages of fastener problems, solutions

These 36 problems and their solutions are a collection of editorial type advertisements bound into a book which illustrates solutions worked out by engineers to fastener problems sent in by customers. This fourth and revised edition reveals new problems, retains the best of the old ones, and pictures and describes each. *Elastic Stop Nut Corp. of America.*

... for your copy, circle No. 276

### 9,000 variations of speed nut fasteners

This 16-page book classifies Tinnerman's more than 9,000 variations of speed nut fasteners into several sections, those for threaded and non-threaded parts, for molding, seal strips, tubing, etc., and other uses, such as harness clamps, and latches. Photos, charts and line drawings are sprinkled throughout the book. *Tinnerman Products, Inc.*

... for your copy, circle No. 277

### Buyers' guide for concrete fasteners

This buyer's aid, covering a complete line to solve all concrete fastening problems, answers in picture and chart form a series of questions: What is a concrete fastener? Why is it good? Where is it used and how is it installed? *Phillips Drill Co.*

... for your copy, circle No. 278

### Stock list of stainless fasteners

This four-page list shows the type of stainless steel fastenings available immediately from this firm's stock and the range of its production capacity. It doesn't attempt to list the more than 9,000 varieties carried, but briefly outlines nuts, bolts, set screws, machine screws, cap screws, sheet metal, thread cutting and wood screws, pins, nails, washers and rivets. Detailed size and price lists are also available. *Anti-Corrosive Metal Products Co., Inc.*

... for your copy, circle No. 279

### Fundamental of hammer-in fastening

The Shure-Set, a hammer-in fastening tool for concrete, masonry and cinder block, is displayed in a four-page specification sheet with illustrations of jobs that can be done with the tool and a needle-in-a-coin demonstration of the principle of the tool. One page is devoted to selecting drive pins, threaded studs, and wire loop fasteners. *Ramset Fastening System.*

... for your copy, circle No. 280

### 40 pages on fastener-to-fastener assemblies

Compiled for design and production engineers, this illustrated guide to primary fastener-to-fastener assemblies researches weld nuts, weld pins, weld and adjusting screws, levelers and a variety of special purpose stock parts. A complete index also directs the engineer to application ideas, thread information, quality control standards and other technical data. *Ohio Nut & Bolt Co.*

... for your copy, circle No. 281

### Rivets for arbor press installation

Designed especially for fast arbor press installation, multi-press Rivnuts are detailed in a single catalog sheet with pictures and "before" and "after" diagrams. Installation is shown step-by-step. *B. F. Goodrich Aviation Products Div., B. F. Goodrich Co.*

... for your copy, circle No. 282

### What you should know about cold heading

A colorful 16-page book from John Hassall tells the designer and purchasing agent what they should know about cold heading in readable text and clear photographs and drawings. Rivets, nails, screws and threaded parts, and double-headed parts are all here along with brief notes on secondary operations. *F. Somers Peterson Co.*

... for your copy, circle No. 283

### Stock list of bolts, screws, rivets

A 12-page collection of stainless steel fasteners, including aircraft bolts, slotted and machine screws, flat and round rivets and washers carried in stock illustrates many of the pieces and gives pertinent data in easy-to-read chart form. Explanations of part and dash numbers for each item are included. *Allmetal Screw Products Co., Inc.*

... for your copy, circle No. 284

### Lock up your fastener troubles

Yes, you can lock up your fastener problems with the fasteners presented in this eight-page catalog. Detailed is the complete line of Simmons fasteners with dimensional drawings, specifications and important features laid out for the Link-Lock, Hinge-Lock, Spring-Lock, Quick-Lock, Roto-Lock and Dual Lock. *Simmons Fastener Corporation.*

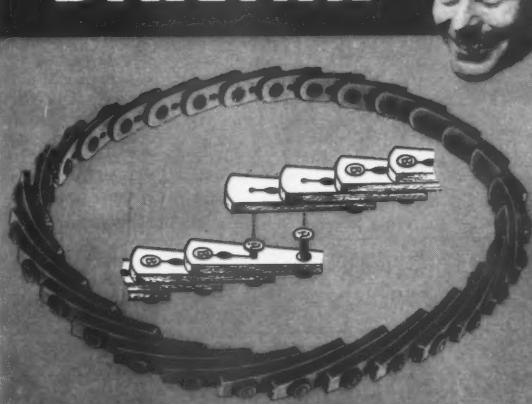
... for your copy, circle No. 285

### Four big advantages with this hex head cap screw

You get four big advantages when you order this hex head cap screw. And this four-page bulletin tells you why—and how you can go about gaining these advantages. *Republic Steel, Bolt and Nut Division.*

... for your copy, circle No. 286

## "All Our V-Belt Problems Are Solved with Big Savings by ADJUSTABLE-LENGTH "DIXLINK"



Need for stocking scores of different lengths of endless V-belt ing can be eliminated by a single coil of "Dixlink" V-Belt. The "Dixlink" is quickly adjusted to drives of any length, easily and speedily installed, can be used much longer than fixed length V-Belts because worn sections can be quickly replaced. Made for every size and kind of V-Belt drive, with maximum power transmission efficiency for drives of from  $\frac{1}{2}$  to 1,000 hp.

## Multi-Purpose Plastic Belting "DIXYLON"

On-the-spot service for belt requirements is also a big advantage of the "Dixylon," an exceptionally strong and durable plastic belting with outstanding advantages in many applications ranging from high speed drives and transmission belts to textile tapes. It is supplied endless, or can be made endless to fit the drive simply with a scribe and hand press—giving a smooth, strong joint. Made in all widths, thicknesses.

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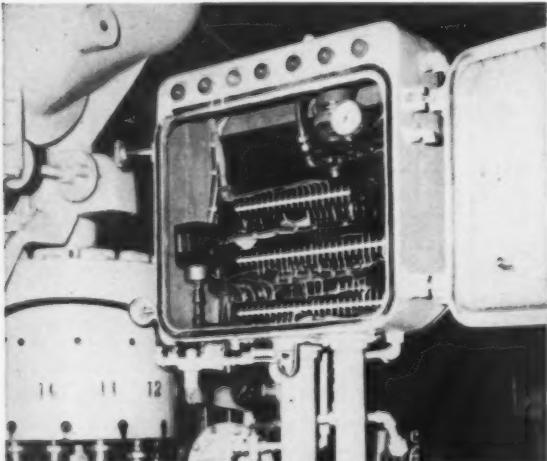
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**Two articles on cold heading copper**

"What the Designer Should Know About Cold Heading," an eight-page article by T. B. Smith, highlights the basics of the cold heading technique, illustrating them with clear photographs. The four-page "Cold Heading Copper for Economy" probes the possibilities of the method in one alloy field. *John Hassall, Inc.* . . . for your copy, circle No. 288

**40-page notebook on hex-socket screws**

A loose-leaf plastic bound notebook spotlights all types of hex-socket screws, nuts, pipe plugs and dowel pins with photos, drawings and many charts. The indexed book directs attention to special screws, mechanical properties and definitions of screw and thread terms. *Allen Mfg. Co.* . . . for your copy, circle No. 289

**Wall card of suggested bolt prices**

Triplex has made its suggested retail selling price list for lag, machine and carriage bolts into a clever 11-in. wall chart with sections staggered and tabbed so that all are visible at the same time. A flip of a tab shows you charts with length, base price and discount by quantity. *Triplex Screw Co., Div. of Murray Corp. of America.* . . . for your copy, circle No. 290

**Fastener specs in a nut shell**

These dozen pages condense material and finish data and performance specifications for a wide variety of light weight nuts of the floating anchor, self-locking, one- and two-lug types. Final pages present advanced designs created to solve complex fastening problems. *Nutt-Shel Co.* . . . for your copy, circle No. 291

**Questions, answers on plug nuts**

Dimensions, selection data and installation instructions are offered in a four-page leaflet on plug nuts, a hardened round nut with small tapered bottom. A one-page insert asks and answers eight frequent questions. *Lamson & Sessions Co.* . . . for your copy, circle No. 292

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### Variety book on clamps, keps, rings

This 28-page offers a little information on a lot of things—terminal clamps, keps, rings, springtites, spring lock washers, "hoz-fas-ners" and thread-cutting springtites and sems. Each section has illustrations and most data in chart form. Quality control testing completes the book. *Reliance Div., Eaton Mfg. Co.*  
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### Visual ID book on stop nuts

Called the "Visual Identification Handbook of Elastic Stop Nuts," this eight-page illuminates over 100 nuts, gives type number and name and occasionally other information in brief. Indexed. *Elastic Stop Nut Corp. of America.*

... for your copy, circle No. 294

### How to do high strength bolting

"High-Strength Bolting for Structural Joints" abounds in "how-to-do-it" information and "now-it's-done" pictures. Specifications for assembly of structural joints summarize bolt, nut and washer data, assembly, inspection, design of compression members, effect of external axial load on bolt tension, painted contact surfaces and many other items. *Bethlehem Pacific Coast Steel Corp.*

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### Spec sheet on wide-crown hand stapler

Data on a hand-operated wide-crown stapler for sealing full containers entirely from the outside fill a two-page specification sheet, which pictures and describes the machine. *Bostitch.*

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### How to work with high strength bolts

This 20-page pocket size book for the man on the job shows how to identify a high strength bolt, different ways to do a good bolting job, how to calibrate impact wrenches and the advantages of high strength bolting. A two-page chart shows how to order the bolts. *Russell, Burdsall & Ward Bolt & Nut Co.*

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### Mine roof and rock anchor bolts

Twenty pages of pictures, text and specifications explore mine roof bolts—uses, advantages and types—and rock anchor bolts for the prevention of rock slides. Installation information and accessories are noted. *Bethlehem Pacific Coast Steel Corp.*

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### ABC's of high-strength bolts

Here's a 12-page book with just about everything you'll want to know about high-strength bolts for structural steel connections, starting with research, principles and design, and concluding with specifications and their application. Last page gives ordering data. *Russell, Burdsall & Ward Bolt & Nut Co.*

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### 34-page spring lock washer notebook

This sectioned loose-leaf book opens with the advantages of spring lock washers, reports reactive tension of the washers, dimensional and physical specifications, typical applications, and concludes with washer production, testing and shipping. Complete from start to finish with pictures and data charts. *Reliance Div., Eaton Mfg. Co.*

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### Principles of the Spin-Lock screw

This book pictures the teeth and threads of the Spin-Lock screw in close-ups which illustrate the special principle of fastening involved. Special advantages of these screws as well as design data and dimensions conclude the book. *Russell, Burdsall & Ward Bolt & Nut Co.*

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### 20-page fastener selector guide

By using the quick index of this pocket sized selector guide you can find the right fastener for attaching wood to concrete or steel, steel to concrete, steel to steel or putting studs in concrete. Lifesize photographs illustrate many fasteners and a list of code numbers and letters helps you with tools and accessories. *Ramset Fastening System.*

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### Box bottom stapler for wide-crown staples

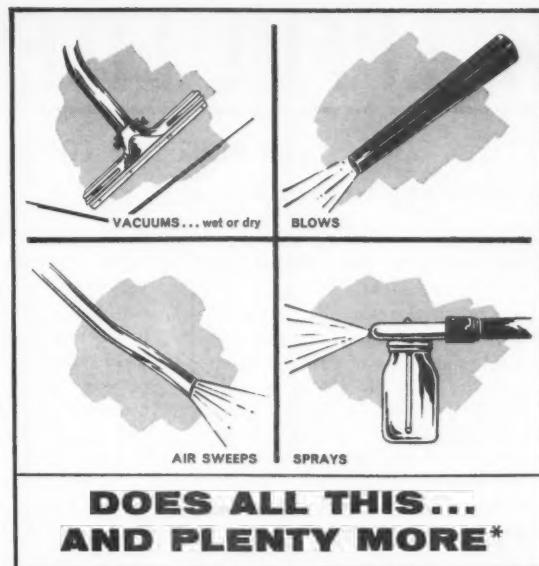
A two-page brief presents the box bottom stapler which uses wide-crown staples, one of the most significant recent developments in the field. Special features of the machine are pointed out on a photograph, and specifications listed. *Bostitch.*

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### Introduction to high-temperature fasteners

These four pages introduce a new family of hot-spot fasteners with static tensile and fatigue strengths at temperatures up to 900 deg. F. Charts and text recommend the tension and shear bolts for jet engine airframe hot spots and for high temperature, high pressure equipment in chemical, nuclear and power-generating industries. Tensile, fatigue and stress-rupture data are included. *Standard Pressed Steel Co.*

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## 60-page quick reference for tool and die makers

"Service Is Our Business" offers a quick-reference tabulation for manufacturers requiring the services of contract tool and die makers. Pictures and descriptions of products and service, statements of policy and advertisements describing specialties and facilities give you a choice among 80 firms. The book also gives the principles of business conduct as practiced by the *Southern California Tool & Die Assoc.*

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## 88-page engineering volume on silent chain drives

From tiny fractional horsepower drives in small power tools to huge drives transmitting thousands of horsepower—that's the course of this story on silent chain drives. As you travel through the book you see engineering data, illustrations of applications and tables of service factors, ratings, chain length and center distance computations. *Link-Belt Co.*

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## 30 pages of data sheets on square-head cylinders

If you're covered with confusion about cylinders, get squared away with this book of data sheets on 31 non-rotating hydraulic units in the 2,000-psi. working pressure range. Here's everything you'll need to know: engineering specifications, mounting data, dimensions and ordering information. A sectional drawing shows construction and each cylinder is pictured. *Anker-Holth Div., Wellman Engineering Co.*

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## Introduction to pre-tested heavy-duty cylinders

This 1958 catalog introduces to the general plant and equipment automation field a line of heavy-duty air and low pressure hydraulic cylinders that has been tested and used primarily as remote control operators of corrosion resistant valves in the paper, chemical and petroleum industries. *W. G. Rovang & Associates, Inc.*

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## How to select, use and operate lifts

"Mechanical and Hydraulic Hand Lift Trucks" answers four major questions in its 16 pages: What are hand lift trucks? How do they operate? How do you select, and how do you use them? Designed to provide an understanding of the part played by hand lifts in today's industrial material handling systems, the book directs attention to the basics of skid and pallet type units, single or multi-stroke mechanical and hydraulic lifting mechanisms. *Assoc. of Lift Truck & Portable Elevator Manufacturers.*

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## Electronics and you— a book of control ideas

"Industrial Electronics for You" displays lots of new ideas for electronic control of resistance welders, automated machine tools, precision test equipment and safety equipment. Designed to offer a new approach to the solution of industrial control problems, the book also peeks at the thought processes of the Robotron firm. *Robotron Corp.*

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## 10 exclusive features of 1958 heat treater

Coming in with the new year are Ipsen's Model B heat treating units. This four-page booklet presents their 10 special design and construction features. These include alloyed ceramic heating tubes, single-piece cast fan and shaft, fan motors with patented integral cast-in, water-cooled fan shaft, to mention a few. Photographs illustrate the new design. *Ipsen Industries, Inc.*

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## 64-page hard-cover book on aircraft plumbing

"Aircraft Plumbing Handbook," directed at engineers and designers in the aircraft and missile industries, concerns fluorocarbon flexible hose and hose assemblies for high temperature and corrosive applications. Working suggestions on plumbing "runs," and good mock-up practices go along with technical data, specifications and working drawings. *Resistoflex Corp.*

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## Help with hundreds of cleaning problems

You'll find hints on handling a hundred cleaning problems in this four-page leaflet packed with facts on blower-suction cleaners that cope with motors, machinery and equipment quickly and economically. The booklet gives specifications and details on four job-rated models, over 60 pieces of optional equipment for special tasks, and an attachment set for converting the machines. All cleaners and components are pictured, as are four special purpose types. *Clements Mfg. Co.*

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WESTERN INDUSTRY — January 1958

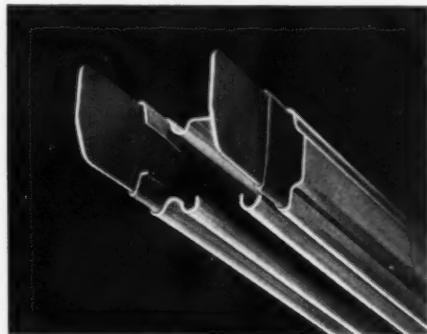
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84

### Fact flashes on switch for automatic lines

This colorful four-pager spotlights "Plug-in Limit," a quickly replaced precision limit switch for cutting downtime on automatic production lines. The pamphlet pictures all five actuator types, has dimension drawings, mounting information and prices. *Micro Switch Div., Minneapolis-Honeywell Regulator Co.*

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### How to use copper foil in industrial plants

Ideas for commercial uses of copper foil, electro-deposited paper-thin sheet copper in continuous lengths and similar to the much used aluminum foil, fill this eight-page booklet, which also tells you how the foil is made. The book recommends it for many building applications, weatherproofing and electrostatic shielding. *Ansolia Div., American Brass Co.*

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### Application data book for precision spindles

This eight-page brochure probes a line of standard spindles for precision grinding and boring operations with both product and application pictures, plus text. Spindles are for use as original equipment or as replacements to improve performance. *Ex-Cell-O Corp.*

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### How to reduce MH costs with overhead feedrail

"Reducing Your Materials Handling Costs Thru Feedrail Electrification Systems," a two-page article in a four-page brochure, reveals the advantages of the metal enclosed trolley busways for cranes, stackers, assembly line work and warehouse lighting. Pictures indicate that safe electrification is as important as MH equipment itself. *Feedrail Corp.*

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### 88-page indexed book on transmission products

A quick glance at the alphabetical index of this fabric-bound book sends you directly to pictures, drawings and specifications for any transmission product from ASA standard drive chains to sprocket or gear wheels. In between you glance over brakes, couplings, chain drives, clutches and all kinds of gears, pillow blocks and take-ups. *Jeffrey Mfg. Co.*

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### Colorful 24-page book on automatic presses

"Here's 'Packaged Automation' to give you more stampings per hour at less cost...in long and short runs," says this 24-page full color book on two-point, straight-side automatic presses. As proof it offers data on frame, drive, crankshaft and crankpins, coil feed, gears, gibbs, slide, oil system and clutch in picture, text and chart form. *Niagara Machine & Tool Works.* ... for your copy, circle No. 165

### 1958 reference guide to silicone uses

This guide to silicones, a 16-pager just off the press, pinpoints 150 commercially available silicone products. With its charts, tables, graphs and data on properties and performance, it is as complete a guide to the semi-inorganic materials as you'll find. Cross-indexed. *Dow Corning Corp.*

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### A stitch in time with metal fasteners

What is metal stitching? When and where is it used? How is it done? These are just a few of the questions answered in this 16-page booklet on metal to metal and metal or non-metal stitching. "Metal Stitching, a New Idea in Fastening" illustrates typical applications and pictures stitchers, some of which have increased production and cut material costs considerably. *Acme Steel Co.*

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### Report on operation of 4,000-lb. lift truck

A colorful four-page folder reports the design, construction and operating advantages of Towmotor's Model 460 lift truck, which is available for gasoline, L. P. Gas or diesel. Engineering data show the truck as small and light, but swift and easily maneuverable. *Towmotor Corp.*

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## Quick reference sheet tells how to put the screws on

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## Adjustable ramps for loading docks

This brochure presents pictures and descriptions of non-floating, manual-floating and automatic-floating Adjust-A-Docks, a hydraulic dock leveling device with capacities from 10,000 to 20,000 lb. One section tells you what factors are most important to consider when selecting a leveling device. Adjust-A-Truck, a 40,000-lb. capacity hydraulic leveler, is also covered. *Rowe Methods, Inc.*

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## Drawings, dimensions for worm and gear sets

Three drawings featured in this six-page manual show complete line assembly of worms and gears including proper bearings, seals, keyways and retainers to give you necessary dimensions for construction of correct gear box. Accompanying tables contain further data and another chart shows rpm., ratio of reduction, and minimum case area for sets with centers from 2 through 7 in. Horsepower of the stock sets range from  $\frac{1}{4}$  through 30. Worms are hardened and ground steel, gears of chilled nickel-tin bronze. *Eberhardt-Denver, Morse Chain Co. subsid.* ... for your copy, circle No. 171

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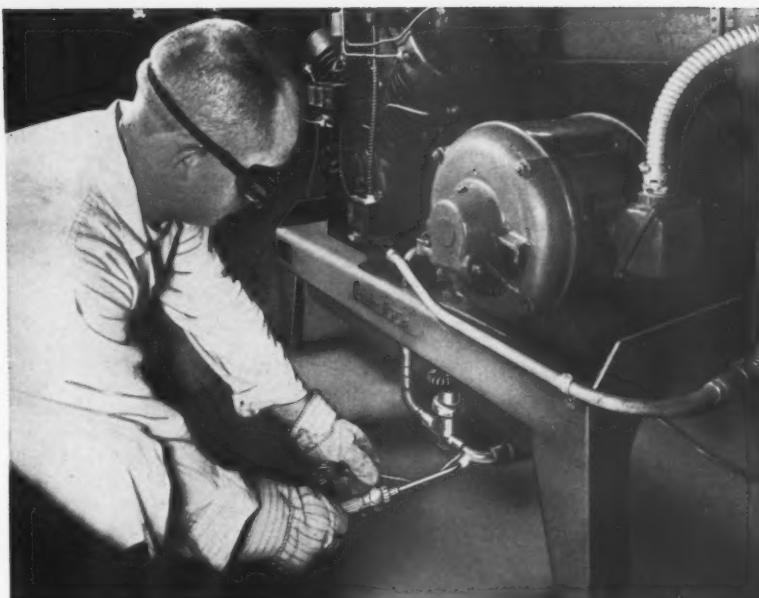
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WESTERN INDUSTRY — January 1958



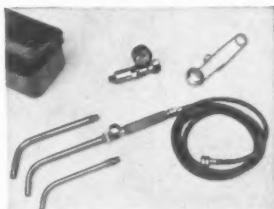
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with malleable housings**

Malleable housings make these pillow and flange blocks virtually indestructible, according to a 12-page introduction to the new bearing units. The booklet also tells about blocks for low and high shaft heights in comparison and specification charts, it concludes with a section on adapter bearings. *Browning Mfg. Co.*

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All you want to know about switches for controlling mechanical forces electrically condenses into a two-page sheet with complete specifications, prices, dimensions and drawings. Handy as a notebook reference. *W. C. Dillon & Co.*

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single crank presses**

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**Dimensions and details  
on blowers, exhausters**

A 24-page catalog filled with information on Lamson blowers and exhausters of various types and a book of blue-prints and performance curves for blowers make up this literature offering. Typical applications are listed and pictured in the first manual which covers heavy duty cast, heavy duty fabricated models, and gives facts on fundamental engineering laws for blower applications. The dimension booklet deals with various models and assemblies. *Lamson Corp.*

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**Layman's picture book  
on big and little bends**

Here's a novel book, called "Please Take a Peek," for those interested in bending pipe, tubing or structural shapes. Full of in-plant pictures with a little text, it was designed to acquaint the layman with the three types of bending—rotary, ram, roll—and how they are used. *Wallace Supplies Mfg. Co.* ... for your copy, circle No. 177

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... for more details, circle No. 66

WESTERN INDUSTRY — January 1958

## Data on double-acting pneumatic cylinders

Helpful data on how to order pneumatic cylinders, with six points to consider, is presented in a 12-page manual that covers swivel, foot and flange mounting types. Illustrations include a two-page view of the cylinders' stream-lined barrel construction, sketches, blue-prints and photos. Other information deals with selecting cylinder levers and mounting parts reference chart. *Industrial Products Div., Westinghouse Air Brake Co.* . . . for your copy, circle No. 178

## 40-plus pages give graphite bearing basics

A bearing, bushing and bar stock package of four booklets directs attention to bearing assemblies for vertical or thrust loads, pillow blocks, bronze sleeve bearings and standard bronze bushings with pictures, diagrams and specifications. Price list for bronze bushings is included. *Randall Graphite Bearings, Inc.*

. . . for your copy, circle No. 179

## One-volume library on overhead conveyors

Pictures, charts, diagrams and drawings abound in this collection of engineering data sheets, field reports, maintenance tips and material on fea-

tures of overhead trolley conveyor systems. Field reports show 12 applications of the equipment in laundries, and in plants making hand bags, lighting fixtures, furniture, toys and plastic coatings, to mention a few. *Rapistan-Keystone, Inc.*

. . . for your copy, circle No. 180

## 48 pages of supplies for gas and arc welding

For those searching for gas and arc welding supplies and accessories, this 48-page book explores the entire field from accessory packs to welding rods — covering brazing alloys, cable, drills, electrodes, fluxes, helmets, plates and many other items in between. Over 100 illustrations brighten the book, while the readable text tells you all you'll need to know about each item. *Air Reduction Pacific Co.*

. . . for your copy, circle No. 181

## Mechanical wood package includes free sample

This fat literature package on self-lubricating mechanical wood offers technical reports on properties and composition; reports for production, design and engineering men on results

of tests using Lignum-Vitae, price lists for bearings, bushings, squares, dimensional stock, rods and filters made from the product. Three reprinted articles tell you how to handle the wood, advantages and limitations, and how to use it for processing applications. A small sample illustrates the facts. *Lignum-Vitae Products Corp.* . . . for your copy, circle No. 182

## "Engineered atmospheres" with web conditioner

This eight-page booklet introduces the web conditioner for regulating moisture content in traveling sheet material or individual pieces of paper, paperboard, textiles, leather, etc. A two-page reprint also explains in some detail how the conditioner works and why it is important to have an "engineered atmosphere." *J. O. Ross Engineering Corp.*

. . . for your copy, circle No. 183

## Introducing the Duo-Torque, a 2-speed transmission

This four-pager introduces Duo-Torque transmission, a two-speed transmission with torque converter, developed for use on fork trucks. Booklet tells the story in picture and diagram form with text on the converter, transmission, controls, and cooling. *Baker-Raulang Co.*

. . . for your copy, circle No. 184

# LOWER COSTS ARE ONLY ONE OF EIGHT ADVANTAGES OF STEEL CASTINGS

Reduced cost of a part or structure is often the first interest in redesign. In addition to producing substantial savings, redesign gives important bonus benefits. Here are eight of the most important.

- ( ) **UNIFORM STRUCTURE THROUGHOUT** —for greater strength.
- ( ) **DISTRIBUTION OF METAL** —for better weight-strength ratio.
- ( ) **CHOICE OF MECHANICAL PROPERTIES** —to fit your specific need.
- ( ) **ECONOMY** —initial and long term.
- ( ) **GOOD MACHINABILITY** —for better designs at lower cost.
- ( ) **DIMENSIONAL STABILITY** —for better fit, better performance.
- ( ) **EASE OF WELDING** —for fast assembly with other parts.
- ( ) **FATIGUE RESISTANCE** —for longer life, less replacement.

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. . . for more details, circle No. 67 on Reader Service Postcard

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... for more details, circle No. 69

88

## A thousand and one uses for expanded metal

For those who can use expanded metal—and this includes just about everyone—this eight-page booklet is a good source of ideas. Be it carbon or stainless steel or aluminum, in standard or flattened mesh, it is shown here in many industrial products accompanied with specifications. *Joseph T. Ryerson & Son, Inc.*

... for your copy, circle No. 185

## Blowers and exhausters described in 12 pages

Application pictures, capacity range charts, a handy data page and performance curves are included in this manual about a line of multi-stage centrifugal blowers and exhausters. A labeled detail photo points out 14 construction and design features, and operational advantages are described. *U. S. Hoffman Machinery Corp.*

... for your copy, circle No. 186

## Speed variator book with power slide rule

This invaluable book of photographs and diagrams, all in full color, on packaged d-c. adjustable speed drives, also has a power unit data slide rule for calculating case dimensions, horsepower, speed range, power unit weight and motor frame size. Four easy steps instruct you in how to

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... for more details, circle No. 70

use the slide rule after you've read about the speed variators, available from 3 through 150 hp., 220, 440, 550 volts, 3 phase a-c. 60 cycle. A typical speed variator specification concludes the 16-page book. *General Electric Co.*

... for your copy, circle No. 187

## What, why and where of welded steel pipe

What? Welded steel pipe in 6 to 36-in. diameters for industrial use. Why? Eleven reasons, among them wide range in diameter and thickness, lengths up to 50 ft., standard or special fittings, variety of joints and high flow capacity. Where? It can be used everywhere—for factory piping, process piping, water supply, sewage disposal, foundations, air supplies, etc. Specification and dimension tables. *Armco Drainage & Metal Products, Inc.*

... for your copy, circle No. 188

## Compare before you buy electric fork trucks

If you are considering the purchase of an electric fork truck, send for this combination comparison chart-buying guide before you make a move. By filling in the columns of this two-page chart with operation, design and maintenance data on different trucks, you can impartially evaluate the various types and models, and select the one that best meets your requirements. *Lewis-Shepard Products, Inc.*

... for your copy, circle No. 189

## See them now in coupling book

A picture book displays full floating shaft couplings in a myriad of applications—connecting shafts in cooling tower drives, fan pump and compressor drives, heavy engine drives and high-speed blowers and compressors. Brief text gives materials, type designations and advantages. *Thomas Flexible Coupling Co.*

... for your copy, circle No. 190

## COIL



## CHAIN

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SUPPLY  
COMPANY

... for more details, circle No. 71

WESTERN INDUSTRY — January 1958

## Construction feature sheet on instrument switches

Advantages and construction features of a line of instrument and control switches are given in a six-page leaflet, which also covers operating information. A description of the various components, dimensions of handles and dial face plates and cover take-off dimensions are also presented. Illustrated with photographs and drawings. *Allis-Chalmers Mfg. Co.*  
... for your copy, circle No. 191

## Generator four-pager on how to get up steam

You can get live steam in 2 to 3 min. with this steam generator, according to a four-page notebook leaflet which tells you how it works. Recommending the generator for aggregate plants, chemical processors, concrete product manufacturers, food and meat processors, and plywood manufacturers, to name just a few, the booklet concludes with condensed specifications. *Malsbary Mfg. Co.*  
... for your copy, circle No. 192

## Fact sheet describes general purpose relays

Details on a small, easily-mounted relay, and the many general purpose and customized applications it is intended for, are given in this data sheet. Covering three mounting arrangements, it gives blueprints for each, plus specifications, a contact combination table and ordering data. *The Hart Manufacturing Co.*  
... for your copy, circle No. 193

## Introduction to series of heavy-duty electric drills

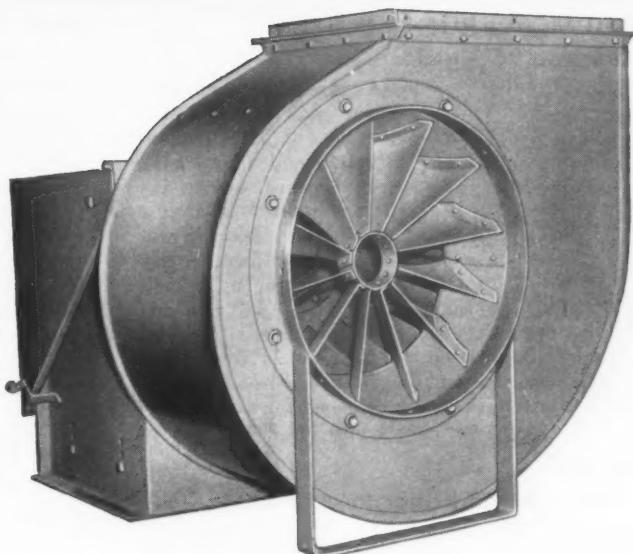
A new series of reversible heavy-duty electric drills is introduced in this four-page folder, which discusses additional power, design developments and specifications for the series. Specifications for the firm's other electric drill series, screwdriver-nutsetters and impact wrenches are also included. *Thor Power Tool Co.*  
... for your copy, circle No. 194

## Physical properties of synthetic chemicals

The 1958 edition of "Physical Properties of Synthetic Organic Chemicals" features the 50 new chemicals added to Union Carbide's 1957 list of 300. Divided into sections and indexed also, the new 28-page book researches acids, alcohols and esters, aldehydes, aryl and chlorine compounds, ethers and glycol-ethers, ketones and oxides, monomers, and aliphatic nitrogen compounds. *Union Carbide Chemicals Co.*  
... for your copy, circle No. 195

More New Literature on pp. 101-02

## READY AND WAITING FOR YOU IN OUR WEST COAST WAREHOUSE!



### A COMPLETE LINE OF FIRST-QUALITY INDUSTRIAL FANS BY "BUFFALO"

As a convenience to our many West Coast customers, a "Buffalo" warehouse in the San Francisco Bay area now stocks a wide line of fans for immediate delivery.

This "Buffalo" Belted Vent Set, for example. Available in 500 to 20,000 cfm capacities, for your small systems, it offers the quiet, stable performance — the high efficiencies — the Limit-Load® non-overloading characteristic of our largest fans. At the same time, it is a lightweight package — easy to install indoors, outdoors or as a power roof ventilator. Capacity may be changed at any time by changing motor or fan pulleys.

Besides this versatile, high-performance fan, we stock rugged "Buffalo" Industrial Exhausters, Vaneaxial Fans, Electric Blowers-Exhausters, the large-system Type BL Ventilating Fan and the full line of "Buffalo" Package Propeller Fans. Your nearby "Buffalo" Engineering Representative will give you full details, recommendations on the best fan plus follow-up on fast delivery.



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INDUSTRIAL EXHAUSTERS BELTED VENT SETS PROPELLER FANS E" BLOWERS-EXHAUSTERS

... for more details, circle No. 72 on Reader Service Postcard

# NEW EQUIPMENT

for Western plant operation,  
production, and maintenance

USE RIP-OUT POSTCARD, page 99, for more information on products described

## LOADED MOTO-BUG

... climbs a 25% grade

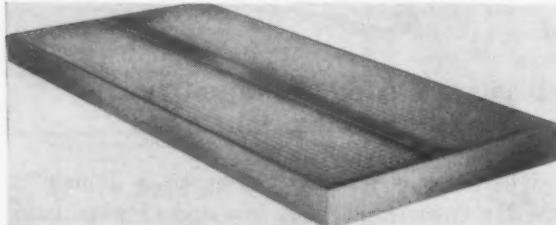


A direct drive to the power flow transmission eliminates shifting, reduces vibration and allows a 12 mph. forward or reverse speed with this Moto-Bug, a combination fork lift and hopper or platform carrier unit. Chugging up a 25% grade under full load (1,500 lb. as a fork, 3,000 as a carrier) the Bug can turn in an 84-in. radius as a fork, 82 in. as a carrier. Bug engine is side mounted. Rear-wheel steering and internal expanding brakes are of the automotive type. *Kwik-Mix Co., Div. of Koehring Co.*

... for more details, circle No. 200 on postcard

## LUMINAIRE

... adds light and color to your plant



Advantages of the use of color in industrial plants are pretty well known these days. Here's a fixture that adds color to your light with either plastic louvers or diffusing panels. The louvered style can be provided with color filters so it can be used for decorative lighting effects as well as general illumination. Both styles have perforated metal trim between panels. No structural changes are necessary to accommodate the fixture, so you can install it in older as well as new plants. *Smooth Holman Co.* ... for more details, circle No. 201 on postcard

## UTILITY WELDER

... with movable shunt regulator



Continuous fingertip current control is provided on this general utility welder by a movable shunt regulator, while an amperage indicator on the panel gives the correct setting for each individual job. Special features of the unit, which is of extra-heavy gage steel, include two welding current ranges and power factor correction for compliance with REA requirements. Standard equipment on the 137-lb. unit includes 6 ft. of three-conductor primary cable with three-prong plug and wall receptacle; 20 ft. of No. 4 electrode cable with holder; 15 ft. of No. 4 ground cable with clamps; a welding helmet, and 5 lbs. of assorted electrodes. *Miller Electric Mfg. Co., Inc.*

... for more details, circle No. 202 on postcard

## STEEL HOT BOX

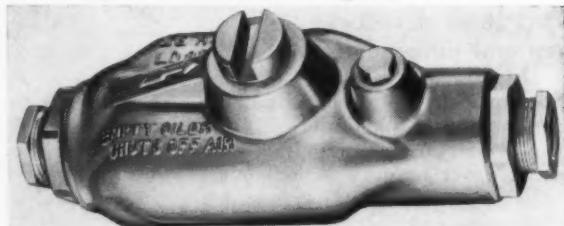
... for castings, forgings, special parts



Forging and castings, or special parts fresh from annealing can be stored, stacked and handled in this steel hot box which is made of a low alloy, high tensile steel. The unit is 38 x 53 x 26 in., has corrugated sides and bottom, and stands 16 in. off the ground to provide clearance for handling by fork trucks. Top of the box is equipped with special welded brackets into which the legs fit when one box is stacked upon another. *Republic Steel Corp.* ... for more details, circle No. 203 on postcard

## LINE OILER

... stops air when oil is gone

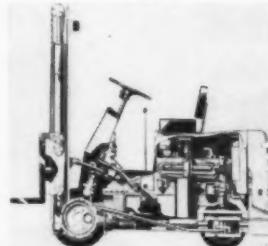


By shutting off the air supply when the oil is used up, this automatic line oiler eliminates one of the most prevalent causes of air tool damage—lack of oil. An oil pickup feeds oil the moment drilling starts; when the oil supply is exhausted the air supply to the air tool is shut off automatically. The unit has a 1-pt. capacity and can be refilled as well as adjusted while in operation. Differential pressures are used to operate the aluminum oiler, which weighs 9 lb. and is less than 1 ft. in length. *Le Roi Div. Westinghouse Air Brake Co.*

... for more details, circle No. 204 on postcard

## SPACE SAVER LIFTS

... all designed for Joe



Designers at Hyster indulge in a little human engineering, refer to masses of statistical information and presto!—come up with a series of cushion-tired lift trucks, ranging from 6 to 8,000 lb. in capacity, designed specifically for, and literally built under, the Joes and Josephines who will ultimately drive them. Result: big things like easy handling from power steering, maneuverability insured by a short turning radius, a high torque engine; and little things like the slope of the hood which gives you a better view, and the practical placement of the controls. Optional extras are available too. *Hyster Co.* ... for more details, circle No. 205 on postcard

**AMPCO** on the Coast . . . gives you the most . . .



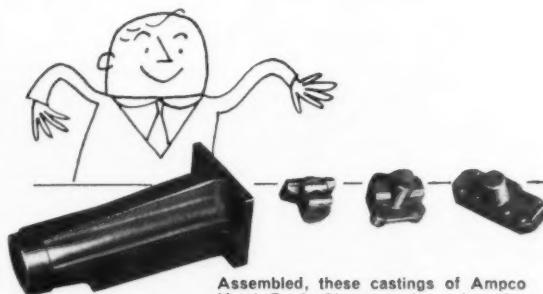
in Castings . . .



and Service



Here's one example:



Assembled, these castings of Ampco Metal Grade 21 are sucker-rod guides used in oil-well pumping operations. Grade 21 resists corrosion and has the hardness necessary to last and last in this rugged service.

Right in "your own backyard" are complete facilities, including forging, pattern, and machine shops, for making castings in alloys most foundries shy away from—chromium copper, pure copper, and bronzes hard enough for die work. You specify the size—a few ounces to 5,000 lbs.

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*Another plant growing in Burbank*



D-66

*Centrifugal Castings*

*Sand Castings • Fabrications • Machined Parts*

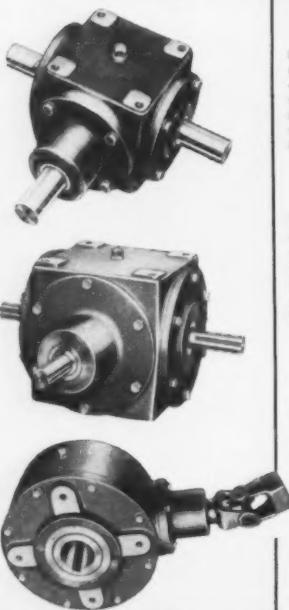
# AMPCO

*... for more details, circle No. 73 on Reader Service Postcard*

# HUB CITY

COMBINING QUALITY  
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Stressproof Shafts  
Timken Bearings



HUB CITY IRON CO. ABERDEEN, SD. DAKOTA

... for more details, circle No. 74 on Reader Service Postcard

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92

## UNIVERSAL ANGLE GEAR BOXES

### MODEL 66

#### STANDARD DUTY

Universal for rotation and mounting. Available gear ratios—1:1, 1 1/2:1, 2:1. Available shaft sizes, 1 1/4" round or splined or smaller. Timken bearings and ground Stressproof shafts.

### MODEL 88

#### HEAVY DUTY

Universal for rotation and mounting. Available gear ratios—1:1, 1 1/2:1, 2:1, 3:1. Available shaft sizes, 1 3/4" round or splined or smaller. Timken bearings and ground Stressproof shafts.

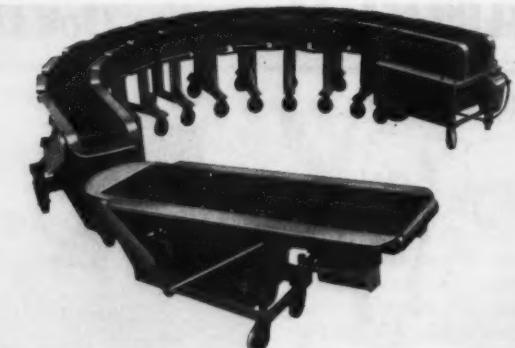
### MODEL 99

#### EXTRA HEAVY DUTY

Helical ring gear type for extra heavy duty service. Choice of three ratios—40 to 6 tooth, 37 to 9 tooth, 34 to 7 tooth. Universal Joint supplied with choice of yokes in round, square or splined. Timken Bearings.

For complete information on these and other HUB CITY products ask your distributor, or contact Grether & Grether, Stockton, California, or factory.

CONVEYOR-STACKER  
... bends in the middle



Flex-Bend, a push-button controlled portable conveyor and stacker, bends horizontally in either direction to mechanically carry materials around stationary objects. Electrically powered, it was designed for use with box cars and highway trucks, but has many applications in warehouses and plants. Because the stacker is portable it's particularly handy for short runs. It has a 6-ft. boom that can be raised or lowered to any heights from 18 to 72 in. and which swings 90 deg. to right or left. *Jervis B. Webb Co.* ... for more details, circle No. 206 on postcard

## LOAD LUGGER RACKS

... for small parts storage

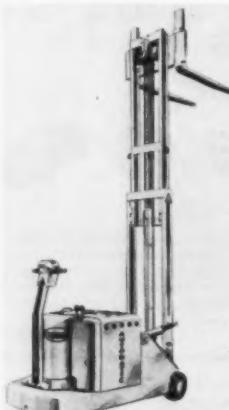


Load lugger racks save valuable space, make screws and rivets accessible and generally bring order out of chaos in small parts storage. Lugs slide into a series of runners and remain suspended by their rims, pulling out like drawers for use. Entire lugs can be removed and exchanged for others also. Racks are of tubular steel, nickel plated, while lugs are drawn seamless from aluminum. *McClintock Mfg. Co.*

... for more details, circle No. 207 on postcard

## WALKIE-STACKER

... with high and mighty lift

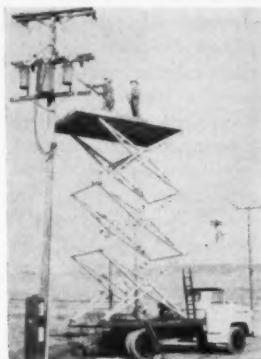


One hundred and thirty-five inches—that's the lift of this electric fork stacker available in lifting capacities of 2,000, 2,500 and 3,000 lb. All with masts of 33 in., the high tiering walkies are at home in close quarters. With a backward tilt of 18 deg. and a forward tilt of 3, all models come with the two types of lift—monolift with 15 in. of free lift and duo-lift offering 68 in. of free lift. The 3,000-lb. truck has a silicone wound heavy-duty Class H drive motor, while the other two come equipped with Class B motors. *Automatic Transportation Co.*

... for more details, circle No. 208 on postcard

## ELEVATING PLATFORM

... with 8 x 14 ft. aluminum platform



No lumber to buy, no scaffold to put up or take down with this extra-size Stratolift elevating platform that allows ample room for three men to work at once. Ideal for wiring, painting, armor rodding and other elevated jobs, it has an aluminum platform that measures 8 x 14 ft. and is prepared for extension walkways and safety railings. Safety is assured by a preset and sealed relief valve to prevent overloading and a positive mechanical lock at any position. Other advantages are its low collapsed height for greater versatility and hydraulic control for smooth action. Six models available ranging with extended height (depending on truck) from 15 ft. 8 in. to 70 ft. 8 in. Working capacity is 1,000 lb.; over-all length of bed, 15 ft. 8 in.; over-all width, 7 ft. 9 in. *Hydro-Point Engineering Co.*

... for more details, circle No. 209 on postcard

## HEAVY-DUTY V-BELT

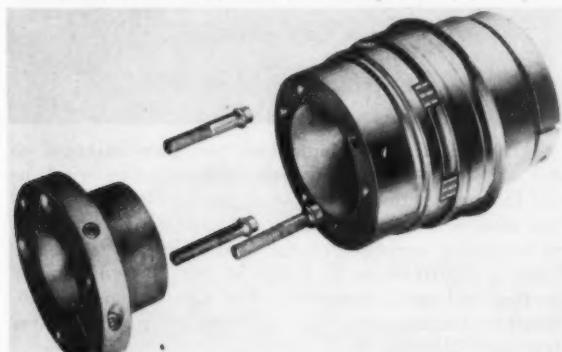
... with "length stabilized" construction

The precision proportioned construction of this V-belt eliminates whip and similar causes of belt turnover and eventual failure on heavy industrial drives, according to the manufacturer. High tensile strength synthetic fabrics comprise the belt, which is performed before vulcanization to preserve the precision balance of the internal component parts. Developed especially for oil rig pumps and other long center industrial drives, the belts are de-stretched during manufacture and length certified. *Raybestos-Manhattan, Inc.*

... for more details, circle No. 210 on postcard

## TAPER-BORED FLEXIBLE COUPLINGS

... in six sizes from 22 to 150 hp. at 1,750 rpm.

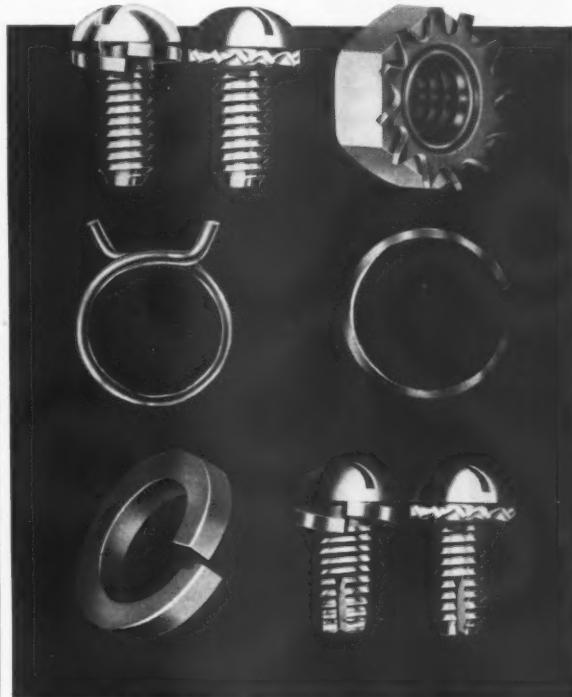


Providing a coupling-bushing combination that affords easy fastening to the shaft with firmness of a shrunk-on fit is a new line of flexible couplings taper-bored for use with QD taper bushings including types SD, SK, SFG and CE. The couplings come in six sizes ranging from 22 to 150 hp., at 1,750 rpm., with stock bushing bore sizes that begin at 1/2 in. and progress to 3 in. by six-tenths of an inch. Adaption of the couplings to taper bushings provides reduction of normal stock requirements of coupling bodies and immediate availability of a wide range of shaft sizes by means of a convenient stock of QD bushings. *Lovejoy Flexible Coupling Co.*

... for more details, circle No. 211 on postcard

**WESTERN INDUSTRY — January 1958**

# WANT TO SPEED PRODUCTION?



## USE EATON-RELIANCE INDUSTRIAL FASTENERS

Eaton-Reliance Industrial Fasteners are designed on the basis of time-tested principles . . . but in line with the modern concept of helping industry speed production, cut costs and improve quality. SPRINGTITES and SEMS—preassembled screws and washers. KEPS—preassembled nuts and serrated washers. SNAP RINGS—take the place of shoulders machined on shafts and in counterbores. HELICAL SPRING LOCK WASHERS—maintain tension on assemblies despite vibration. One-piece HOZ-FAS-NERS—supply firm connections on rubber, plastic or fabric hose. Thread-Cutting SPRINGTITES and SEMS eliminate expensive tapping.

You are invited to use the 45 years' experience Eaton-Reliance has with industrial fasteners. Send for your copy of Engineering Bulletin 4K/3.



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"SHELBY" SEAMLESS STEEL TUBING  
"ELECTRUMITE" WELDED STEEL TUBING  
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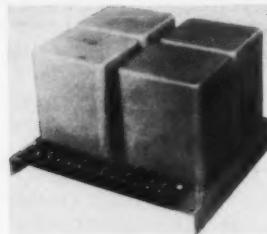
**S. S. E. R. V. I. C. E.**

SAN FRANCISCO 7

... for more details, circle No. 78 on Reader Service Postcard

## PRESS CONTROL

... with "wear-proof" parts



Transmag, as the static device is called, has external connections essentially like those of conventional anti-repeat press controls, and operates on 115-v. a.c. power. The safety device receives input signals from the press "run," "stop," and "inch" buttons and limit switches, and delivers its output to the magnet of the air valve. *Clark Controller Co.*

... for more details, circle No. 212 on postcard

## CONSTANT LEVEL OILER

... has 2 oz.-1 gal. range

This redesigned oiler, with adjustable oil level, high surge level and special air intake, covers a range of 2 oz. to 1 gal. in capacity and can replace three models formerly needed. The new design provides the largest possible internal passages for use of heavy oil while a new top filler cap simplifies replenishing of oil without removing reservoir. An eccentric coupling adjusts oil lever one-half inch on smaller capacities. *Oil-Rite Corp.*

... for more details, circle No. 213 on postcard

## STRAP STRETCHER

... works in any position



This steel strapping hand tool, precision balanced so that strap can be applied from any direction with the tool in any position, comes in light, medium or heavy-duty models to suit various jobs. Called the B5 stretcher, each model is engineered to be used with every strap size from  $\frac{1}{4} \times .010$  in. to  $\frac{3}{4} \times .035$  in. Strapping is quickly inserted and easily removed, while handles can be positioned for maximum leverage. A rotary gripping dog gives continuous take-up. *Acme Steel Co.*

... for more details, circle No. 214 on postcard

## MILD ELECTRODE

... deposits metal at rapid rate

Easyarc 30, a mild steel iron powder-type electrode, deposits metal at the rate of 17 lb. per hour, quick work for a stick electrode. Extra heavy iron powder coating and increased machine settings are the reason why. The steady spray-type transfer and deep shield maintained permit flexibility of arc length in fillet or lap welds. *Air Reduction Pacific Co.*

... for more details, circle No. 215 on postcard

## HIGH CAPACITY TRUCKS ... with automatic transmission



Drivers of these 15 to 20,000-lb. capacity lift trucks can do a lot more work in a shorter time because of automatic transmission, which eliminates clutch pedal operation and constant manual shifting. The transmission in this gas truck line is a combination of a torque converter and a planetary transmission that combines the plus features of a hydraulic torque converter and a fluid coupling. Transmission has two forward and two reverse speeds with the driver making a quick change to either by flicking a control handle. *Yale Material Handling Div., Yale & Towne Mfg. Co.*

... for more details, circle No. 216 on postcard

## FIRE AWAY!

### ... cable tape won't burn

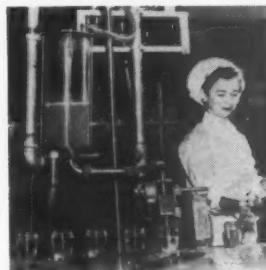
A fireproofing cable tape, designed specifically to pro-

TECT cables in circuits with fast acting breakers, exceeds the requirements of public utilities and general industry by staying strong in fire, water, acids and alkalies. Durability results from asbestos construction and a thorough impregnation with silicone. Tape edges are selvaged so threads don't pull out and application is quick because tape is applied dry. *Johns-Manville Corp.*

... for more details, circle No. 217 on postcard

## PRECISION LIQUID DISPENSER

### ... fills moving containers with exact amounts



Providing a new approach to the problem of adding accurately measured quantities of liquid into containers moving at high speeds on food packaging lines is the Flocron unit that operates on a "no-container no-fill" principle. With this method a stream flowing under constant pressure through a clean, uniform nozzle will always dispense the same quantity of liquid in any given specified time interval. When the unit is not dispensing, the stream is diverted by a solenoid-operated deflector and returned to the supply reservoir for recirculation. Timing of the solenoid is electronic and adjustable over a wide range. For these high-speed operations (up to 300 cans per min.) photo-electric switching, with the containers interrupting a light beam, times the solenoid. All parts of the Flocron in contact with the liquid are of sanitary materials such as stainless steel, Pyrex glass and plastic tubing. *Magnuson Engineers, Inc.*

... for more details, circle No. 218 on postcard



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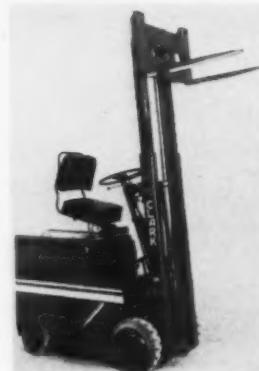
GENERAL OFFICES: 1910 So. Figueroa St., Los Angeles 7, Calif.  
WAREHOUSE & CUSTOMER SERVICE: 1937 So. Flower St., Los Angeles 7, Calif.  
424 W. Jefferson St. 745 Fifteenth St. 4035 E. 52nd St. 2041 W. Anaheim St.  
PHOENIX, ARIZ. SAN DIEGO, CALIF. MAYWOOD, CALIF. LONG BEACH, CALIF.

... for more details, circle No. 81 on Reader Service Postcard

96

### BATTERY-POWERED FORK TRUCK

... weighs 4,000 lb., with 1,500 lb. capacity

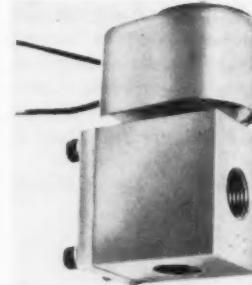


Called the Electric Clipper 1524, this machine will travel 6.3 mph. loaded, has a lift speed of 43 fpm. loaded and will climb a 10% grade. Minimum aisle for right-angle stacking is 7 1/2 in., plus load length. Design features include finger-tip control lever on steering column; fast, jerk-free acceleration; pivoted steer axle; anti-kick-back tie rods; box-type welded frame; three independent braking systems, and a hinged battery compartment cover. *Clark Equipment Co.*

... for more details, circle No. 219 on postcard

### HIGH PRESSURE SOLENOID VALVE

... especially for hydraulic applications

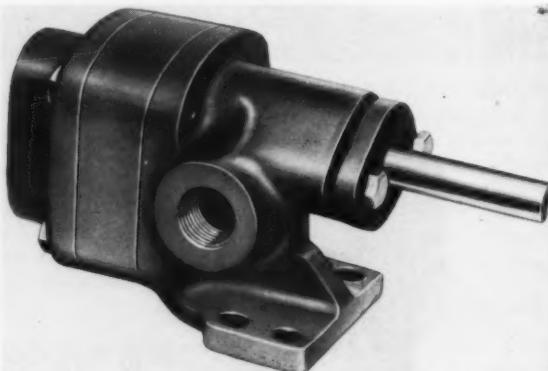


Designed for tight shut-off on pressures up to 1,500 psi., these two-way high-pressure solenoid valves are especially suited for applications such as hydraulic lifts and elevators, can be mounted in any position. Internal pilot operated piston type valves with angle bodies, they are available in either stainless steel or brass bar stock with teflon discs and stainless steel magnetic parts. Valves may be supplied for continuous or intermittent service and come in 1/2 or 3/4-in. pipe connections and with general purpose, water-tight or explosion proof solenoid enclosures. *Automatic Switch Co.*

... for more details, circle No. 220 on postcard

### HEAVY DUTY ROTARY PUMP

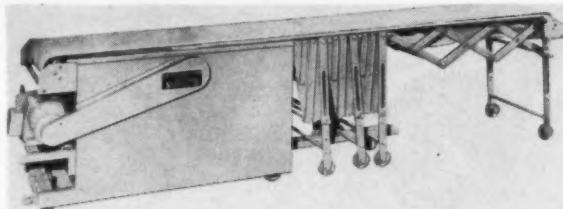
... has few operating parts



With suction and discharge openings from 1/2 in. N.P.T. to 1 in. N.P.T., this heavy duty rotary pump is ruggedly built with few operating parts to give you maintenance problems. Available in sizes 1 through 4, the herringbone gear rotary pump can be used at pressures to 500 psi., in capacities to 25 gpm. Outstanding features are nodular herringbone gears, four forced-feed lubricated roller bearings and bronze wear plates. *Worthington Corp.*

... for more details, circle No. 221 on postcard

**STREAMLINED EXTENDOVEYOR**  
... is a quick-change artist



This portable belt conveyor extends or retracts in a flash, reaching to the ends of trailer trucks, box cars or warehouses, across platforms or just a few feet ahead. As distant areas fill up, it retracts easily for closer loading. In this redesigned model the extendable portion of the conveyor bed is full width, extending well beyond the edge of the belt and over the link arm connection. *Standard Conveyor Co.*

... for more details, circle No. 222 on postcard

**HIGH FLYING PLASTIC**

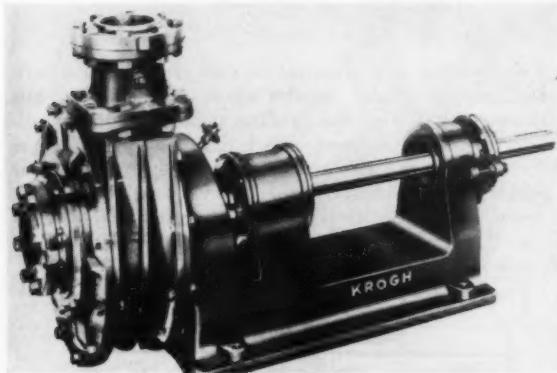
... for high temperature insulation

Not in many a moon has there been such a man-made material as Astrolite which may soon be traveling around the earth as a liner for a rocket engine or a nose cone for an ICBM. This reinforced plastic material, with an impressive resistance to temperatures in the 5,000 deg. F. range, contains laminations of near-pure silica fibers, a reinforcing medium known to the rocket set as Refrasil. Short interval performance of Astrolite, currently insulating rockets and missiles, looks favorable for ultra high temperatures up to 10,000 deg. F. Hence its potential value for one shot applications in rockets and missiles. *H. I. Thompson Fiber Glass Co.*

... for more details, circle No. 223 on postcard

**SAND AND SLURRY PUMP**

... with liners of hard metal or rubber



Flexibility is given this pump by the use of wear-resistant liners, replaceable and interchangeable with either hard metal or rubber, making the pump suitable for any type of pumping problem and adaptable to changed operating conditions without expensive modifications or installation changes. The pumps range in size from 2 to 8 in., with capacities from 20 to 2,000 gpm, up to 100 ft. head or more. Uses include pumping sand, slurries or gritty water on flotation processes, cycle or ore plant feed, refuse or tailings disposal, sand pit transfer and dredging, as well as many special abrasive pumping jobs. *Krogh Pump & Equipment Co., Inc.*

... for more details, circle No. 224 on postcard

**GAR-BRO WHEELS**  
FOR ALL INDUSTRIAL APPLICATIONS



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ENGINEERING SERVICE

WHEEL TYPES: Drop Center, Lug Base, Disc, Demountable.

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## POWER BATTERIES

... quicken speed of electric trucks



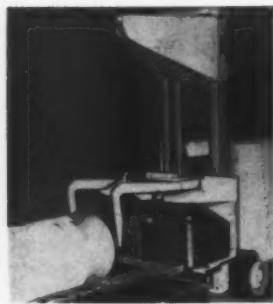
Longer, heavier plates and the five-fold Slyver-Clad construction increase the capacity of these two motive power batteries for electric industrial trucks. Of the same over-all dimensions as industry's former standard of 60 amp. hr.

per positive plate, Type HC provides a rated capacity of 72 amp. hr. when discharging at its 6-hr. rate. Type CMS with a rated capacity of 55 amp. hr. per positive plate at the 6-hr. rate, is especially designed for center control sit-down fork trucks with over-all collapsed mast heights of about 72 in. *C & D Batteries, Inc.*

... for more details, circle No. 225 on postcard

## UNIQUE TRUCK

... dresses steel mill rolls



Engineered for removal of bearings from ends of steel mill rolls, this truck performs four functions; removes couplings, removes bearing chocks, replaces chocks on reground work rolls, and then replaces couplings. The whole dressing operation is accomplished with a pair of arms and a ram, both hydraulically operated, and a lifting hook. No Dunnage

blocks or special storage racks are needed. *Elwell-Parker Electric Co.*

... for more details, circle No. 226 on postcard

NEW OAKITE CLEANERS  
GIVE YOU MORE FOR YOUR  
PAINT-PREPARED DOLLAR

Does your trouble chart show that you need better cleaners, strippers or surface conditioners?

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- Phosphating process shows poor results in salt spray tests. See 3.

**FREE** Ask for booklets or bulletins on:

- 1 Oakite Compound No. 131
- 2 Oakite Rustripper
- 3 Oakite CrysCoat No. 89

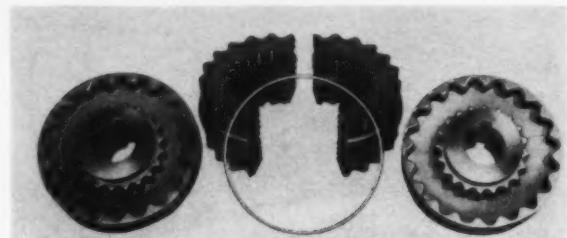
Write to Oakite Products, Inc., 1001 E. First St., Los Angeles, or 681 Market St., San Francisco, Calif.



**OAKITE**

Technical Service Representatives in Principal Cities of U.S. and Canada  
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**FLEXIBLE CUSHION COUPLING**  
... features rubber-toothed sleeve

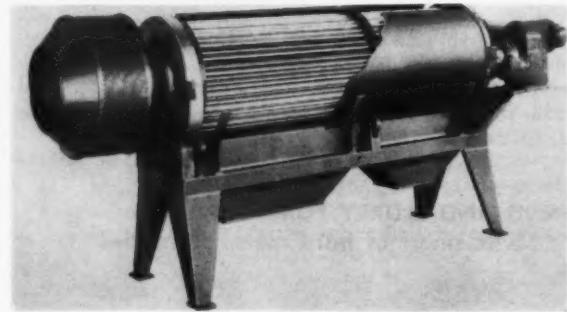


Comprising only three basic parts—two hub flanges and a two-piece rubber sleeve, this Sure-Flex coupling needs no lubrication since there are no rubbing or wearing surfaces. Internal and external teeth of the sleeve mate with flange hub teeth to lock tight under torque load without clamps or screws. The rubber sleeve with two planes of engagement absorbs angular misalignment up to one deg., parallel misalignment of 1/32 to 1/16 in., depending on shaft size, and free end-float up to 1/8 in. No tools needed for final assembly or for declutching of the couplings. Supplied in six sizes for motors from 3 to 80 hp., with shaft bores available from 5/8 to 2 1/4 in. *T. B. Wood's Sons Co.*

... for more details, circle No. 227 on postcard

## BAR-TYPE GRADER

... handles whole and cut beans



Employing a new principle of size grading, this horizontal bar-type grader handles whole or cut green beans with equal efficiency, size grading them according to diameter and in accordance with U.S. standards. The machine comes as a single grader for two separations or as a double grader for three. Capacities vary with the variety of beans, whole bean capacity ranging from 3,500 to 4,200 lb. per hour and cut beans from 4,000 to 5,000. *Food Machinery & Chemical Corp.*

... for more details, circle No. 228 on postcard

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... for more details, circle No. 85 on Reader Service Postcard

## Specification booklet on steam heating coils

Double tube steam distributing coils are detailed in this eight-page specification booklet, which outlines special features of the units and pictures them. Physical data is illustrated with an installation type drawing, and a two-page section on selection data includes tables on final air temperature and temperature rise correction factors. Air friction tables and piping instructions, complete with typical piping diagrams, are also listed. *American Blower Div., American Radiator & Standard Sanitary Corp.* . . . for your copy, circle No. 196

## Do's and don't's on care of unit heating equipment

Here's a tip sheet on what to do and what not to do when installing and caring for unit heating equipment. Called "Care and Maintenance of Steam and Hot Water Unit Heaters," its pointers on installation cover low pressure gravity systems, vacuum systems, high pressure systems, branches from steam supply mains and strainers. Recommended maintenance procedures cover motors, heating elements, fans, casings,

traps and check valves, with special consideration given to forced water and blower type unit heaters. Causes and prevention of system corrosion are also discussed. *Air Moving & Conditioning Association.*

. . . for your copy, circle No. 197

## 32-page general catalog on ball-bearing swivel joints

A complete line of ball-bearing swivel joints for use in fluid handling industries is covered in this general catalog which opens with a description of joints in general and basic types. The rest of the booklet treats specific joints, giving pictures, applications, dimensions and specifications. Ordering information is included. *Chiksan Co.* . . . for your copy, circle No. 198

## Tab-indexed data book on industrial dust recovery

Here's a quick reference book on the collection and recovery of industrial dusts. Opening with a section on the advantages of dust recovery in plants, the book continues on to cover cyclones, precipitators, collectors, combination systems and hopper valves. Each individually tabbed section has photographs, cutaways and drawings, and explanatory text. *Buell Engineering Co. Inc.*

. . . for your copy, circle No. 199

## 16-page spec sheet for belt conveyor pulleys

A 16-page specification sheet on belt conveyor pulleys covers welded steel pulleys and their hubs, welded steel slatted pulleys, cast iron pulleys and hubs and lagging for pulleys. Photographs and accompanying text illustrate and define each unit. *Jeffrey Mfg. Co.*

. . . for your copy, circle No. 310

## Introduction to mechanical engineering service

This four-page leaflet introduces Hundley Engineering, an integrated engineering consultation, design and procurement service in the field of mechanical engineering. It explains each function of the firm, lists its experience and fields of interest, and gives address and telephone number for contact. *Hundley Engineering.*

. . . for your copy, circle No. 311

## Picture pamphlet on sectional heat exchanger

A four-page picture pamphlet shows this sectional heat exchanger's complete system and explains its operation. Functions are explained in part with a cutaway drawing also, and accompanying text gives design benefits. The final page pictures many types of air equipment. *Niagara Blower Co.*

. . . for your copy, circle No. 312

## eliminate this hazard! USE BLACKMER HAND PUMPS



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Available with complete line of accessories for use with almost any type of storage.



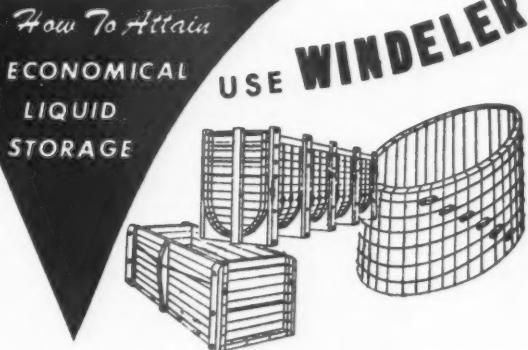
"liquid materials handling" equipment

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WESTERN INDUSTRY — January 1958



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## Fold-out sheet treats heavy-duty rotary pump

Here's a concise picture of heavy-duty rotary pumps in capacities to 25 gpm. and pressures to 500 psi. Features are pointed out on two photographs, one a cutaway, and advantages are listed for quick reference. Listed also are construction materials. Dimension drawings and a speed, capacity, pressure, and power requirement chart are included. *Worthington Corp.* . . . for your copy, circle No. 313

## Illustrated folder on screen, feeder, conveyor

This six-page fold-out pictures vibrating screens, feeders and conveyors for abrasive, hot or pulverized materials, chemical products, grain and seed, metal parts and other specialties. Advantages are listed as well as general design and drive features. *Dravo Corp.* . . . for your copy, circle No. 314

## "Standard Flexible Shafts for Power Transmission"

Seven standard sizes of flexible shafts for power transmission are detailed in the dozen pages of this booklet. Each is pictured, identified by number and features, and accom-

panied by pertinent information. Illustrated briefly with application photographs. A chart helps you find the proper core size for your application. *B. W. Elliott Mfg. Co., Inc.*

. . . for your copy, circle No. 315

## Lumber unloading chart of concise, vital data

A single 17 x 22-in. sheet condenses more information on unloading packaged lumber than you can shake a stick at. Designed to be attached to each side of a lumber load, the chart tells yard crews about weights, what equipment to use and how to use it, alternate means for moving stacks of lumber and safety rules. *Signode Steel Strapping Co.*

. . . for your copy, circle No. 316

## Brief brochure on truck designed for quick action

A 2,000-lb. capacity electric fork truck designed for speedy load handling and tiering in confined areas is exhibited in a four-page brochure, which pictures center control, sit-down operation, tilting and telescoping features. Specifications, photos and engineering drawings are presented. *Elwell-Parker Electric Co.*

. . . for your copy, circle No. 317

## Metal Progress reprint on titanium tubing

Those responsible for the design and operation of processing equipment will be interested in "Present Status and Future Potential for Titanium Tubing," an eight-page article illuminating the characteristics of titanium tubing and the involved method of producing it. The article by metallurgist T. M. Krebs explains why titanium tubing is immune in many corrosive conditions and thus a real boon to process engineers. *Babcock & Wilcox Co.*

. . . for your copy, circle No. 318

## Burners for localized open heat treating

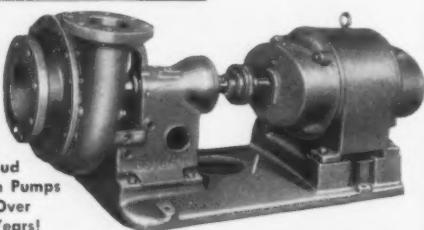
How to extend possibilities and increase effectiveness of selective open heating is discussed in a ten-page manual about Superheat burners that use only commercial fuel gas and air (no bottled oxygen), yet can frequently replace oxy-gas to cut operating costs. The booklet illustrates operation and construction of the units, the combustion system of which it is a part, and typical custom-designed burners. A dozen typical applications are pictured and there are tables and charts with further helpful data. *Selas Corp. of America.*

. . . for your copy, circle No. 319

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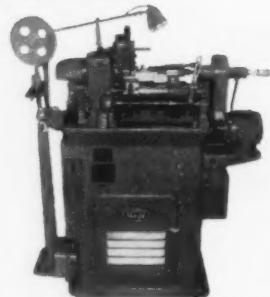
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### AFTER SALE:



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1" Collet Cap.  
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A-46  
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. . . for more details, circle No. 89 on Reader Service Postcard

# The Industrial West

ON ITS WAY

plants • production • distribution • personnel

## Denver Firm to Build Uranium Processing Mill in Wyoming

GRAND JUNCTION, COLO.—The U. S. Atomic Energy Commission and Fremont Minerals Inc., of Denver, recently signed a contract for the sale of uranium concentrates (U308) to the commission, which will result in the construction and operation by Fremont of a new uranium processing mill at Riverton, Wyo.

The mill will have a capacity of about 500 tons of ore a day. Estimated cost is \$3,500,000, and completion is expected in about 12 months.

The mill will serve as a custom milling facility for ores offered for sale by independent operators in the general Wyoming area. In addition, Fremont will purchase and process the government stockpile of ore at Riverton.

## Foucar, Ray & Simon Elects Diehl President

SAN FRANCISCO—Foucar, Ray & Simon, marking their 50th anniversary, announced election of *Sidney H. Diehl* as president of the firm. Founder *H. L. Simon* moves up to be chairman of the board.

Diehl joined the firm in 1934 as a shipping clerk. In 1954 he was elected vice president and general manager.

In other personnel changes, *Russ Leonard* was elected a vice president and *E. Herrington* named secretary.

## Albuquerque AEC Office Awards Tank Contract

ALBUQUERQUE—A contract for the installation of three water storage tanks at the nuclear propulsion static test area of the Nevada Test Site has been awarded to the Pittsburgh-Des Moines Steel Co., El Monte, Calif., by the Albuquerque Operations Office, U. S. Atomic Energy Commission.

The contract, amounting to \$107,360, calls for a 150,000-gal. surface tank, a 100,000-gal. elevated reservoir and a 30,000-gal. elevated tank.

## WESCON Picks Los Angeles for 1958 Show

LOS ANGELES—This city's Pan-Pacific Auditorium has been selected as site of the 1958 Western Electronic Show and Convention to be held next August 19-22. According to *Don Larson*, business manager, there will be 829 booths for exhibitors. Convention director is *Walter E. Peterson*, director of Electronics Division, Radioplane, a division of Northrop Aircraft, Inc.

The WESCON board named *L. W. Howard* as chairman of the board of directors, and *Bruce S. Angwin*, chairman of the executive committee. Howard, president of Triad Transformer Corp., represents the West Coast Electronic Manufacturers Association and Angwin of General Electric represents the Institute of Radio Engineers.

## New Portland Location for Hyster Sales

PORTLAND—Hyster Sales Co., retail outlet for Hyster industrial trucks, has purchased the former plant of Nelson Equipment Co., on SE. McLoughlin Blvd. here. The plant, which is now being occupied by Hyster, has been converted to one of the largest industrial truck sales and service stores in the Northwest.

In the new location 34,000 sq. ft. of floor space permits larger service and parts facilities, a large display room fronting on McLoughlin Blvd., plus considerable room for future expansion, a parking area and a truck-loading dock.

*John W. Givens* is manager of the sales plant which serves an area comprising Oregon, southwestern Washington, eastern Idaho and northern California.

## Allis-Chalmers Fresno Shop

FRESNO, CALIF.—Allied Electric Motor Service, 3805 Ventura, has been appointed a certified service shop for Allis-Chalmers motors and transformers in Fresno and Tulare counties. *John Nesper* and *Sal Rome* are co-owners of the shop.

## Borden Creates New Division for 11 Western States

SAN FRANCISCO—A new and autonomous operating unit, to be known as the Borden Company, Western Division, has been formed to strengthen Borden's plans for expanded business activity in the West. Included in the integrating move are all the firm's dairy and food product operations in the 11-state Western area.

Divisions affected are the California (fluid milk and ice cream) division; Pacific cheese division, and three western districts of the Borden Food Products Co. Operations of the special products and chemical divisions are not affected.

*G. F. Morrill* is president of the new division and *A. S. Parlett*, executive vice president. Other key personnel include *Dudley N. Carlsen*, *Duane J. Louis*, *L. S. Merrill*, *Paul L. Scott* and *R. B. Keator*. Most are lifelong Western residents, according to *Harold W. Comfort*, Borden president.

Among reasons given by Comfort for creation of the new division were "an expression of confidence" in the future of the West and its potentialities for growth and expansion, and recognition of the fact that this area is an entity, a unit in itself, with its own unique pattern of living, with distinctive requirements for process and, particularly, distribution.

## \$1,000,000 Container Plant To Be Built in Idaho

BURLEY, IDA.—Construction plans for a \$1,000,000 corrugated container plant here have been announced by Boise Cascade Corp., with completion of the facility scheduled for early summer. Some 50 persons are expected to be employed at the plant, which will afford an important service to the state's rapidly expanding food processing industry. Boise Cascade has timber holdings and sawmills in Idaho and Washington, and is also building a container plant at Attalia, Wash.

## Fafnir Facility Typical of Industrial Park in West

MILLBRAE, CALIF.—Characteristic of the new industrial park concept in the West, is the facility under construction by the Fafnir Bearing Co., on part of the old Mills Estate, in this city's Millsdale Industrial Tract.

A tilt-up concrete slab structure, for which Donald Beach Kirby is the architect, the facility is a warehouse and office area, which will cost about \$100,000, exclusive of land. Storage area for stock comprises over 7,000 sq. ft., and roof span of the structure is carried by large steel girders to eliminate posts or columns in the warehouse area.

Robert H. Gordon is district manager of Fafnir, a leading national producer of roller bearings.

## C. W. Marwedel Establishes Branch in San Jose

SAN JOSE, CALIF.—A branch sales office and warehouse at 1310 N. Tenth St., has been established by C. W. Marwedel, San Francisco industrial supply firm, a subsidiary of the Garrett Corp.

Rapid industrial development of this city and the Santa Clara Valley made necessary the expansion move, said company officials. The new facilities will handle more than 100 famous brands of industrial supplies, including tools, metals, abrasives and power transmission equipment.

## New Process for Regent

DOWNEY, CALIF.—Regent Manufacturing Co. has announced installation of a phosphating process system that employs Turcoat 3557 chemicals, as part of Regent's program of expanding its finishing facilities. A conveyorized, 90 hp., Downdraft paint booth, 18 x 35 ft. has also been added for painting parts after phosphating.

## Press Plant in Palo Alto

PALO ALTO, CALIF.—Ground-breaking ceremonies were held last month for the National Press \$140,000 plant at 850 Hansen Way in Stanford Industrial Park.

## Boston Gear Demonstrator Tours Southern California

LOS ANGELES—A first-hand view of the latest power transmission products in actual operation was given Southern California industrial people during the recent tour of the Boston Gear mobile demonstrator. Included in the demonstration, designed to help users in proper selection and application, are working models of many of the more than 7,000 gears, chain and sprockets, speed reducers and other products made by Boston Gear and stocked by Andrews Hardware and Metal Co., 334 So. Main St. Special representatives of the two firms accompanied the demonstrator.

## E. Jordan Brookes Co. Moves to Larger Quarters

LOS ANGELES—Now in new and larger quarters at 6601 Telegraph Road is the E. Jordan Brookes Co., Inc., manufacturers' agent and distributor of industrial materials.

The move to a 40,000-sq. ft. building in the Vail area of the central manufacturing district commemorated the company's 20th anniversary. Larger office and warehouse facilities at the new location will enable the firm to offer a greater variety of stock materials than ever before, company officials said.

Brookes distributes products such as aluminum, beryllium, brass, copper, nylon and silver brazing alloys in sheet strip, rod, wire and tubing as well as semi-fabricated materials including perforated metals, tubular specialties and wire cloth.

## Huseby Federal Fibre Rep.

SAN FRANCISCO—Federal Fibre Corp., New York manufacturer of a complete line of disposal cans, box trucks and mill and tote boxes, has appointed the M. F. Huseby Co., Inc., as representative covering the states of California, Arizona and New Mexico. The Huseby organization has offices at 2166 Market St. here, and at 2501 Yates Ave., Los Angeles.

## Packaging, M-H Show Sponsors Discuss Exposition Expansion

SAN FRANCISCO—Proposals for increasing some of the show's activities to fully embrace new market problems in the West were discussed by the Board of Sponsors of the Western Packaging and Materials Handling Exposition January 9 in the Beverly Hills Hotel, Los Angeles. The exposition will be held in the San Francisco Civic Auditorium, August 11-13.

Latest trends in Western industry as they apply to packaging and material handling operations, and how the exposition—seventh Western show—can be expanded to accommodate them, were considered by the Board, which is composed of leaders in the two industries.

According to an announcement by William H. Jaenicke and Kenneth O. Dean, co-chairmen, sale of exhibit space shows greater interest than in any previous show, with the main arena virtually sold out and considerable other space also reserved.

The session in Los Angeles was a dinner meeting given by Saul Poliak of Clapp & Poliak, the Exposition's producers.

## Honeywell Division in Denver Increases Facilities 25%

DENVER—Heiland Division of Minneapolis-Honeywell Regulator Co. has completed enlargement of its production and engineering facilities, a 25% increase that adds 12,000 sq. ft. to its plant.

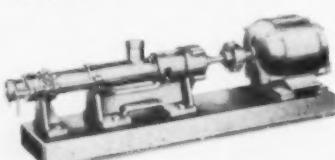
Second major physical expansion within two years, it is designed to meet increased demand for the firm's oscilloscopes, high-speed recording instruments used in a wide variety of applications covering industrial, scientific, military and medical fields.

## Hydraulics Firm Moves

PASADENA, CALIF.—Pasadena Hydraulics has moved to a new location at 1433 Lidecombe, El Monte, Calif.

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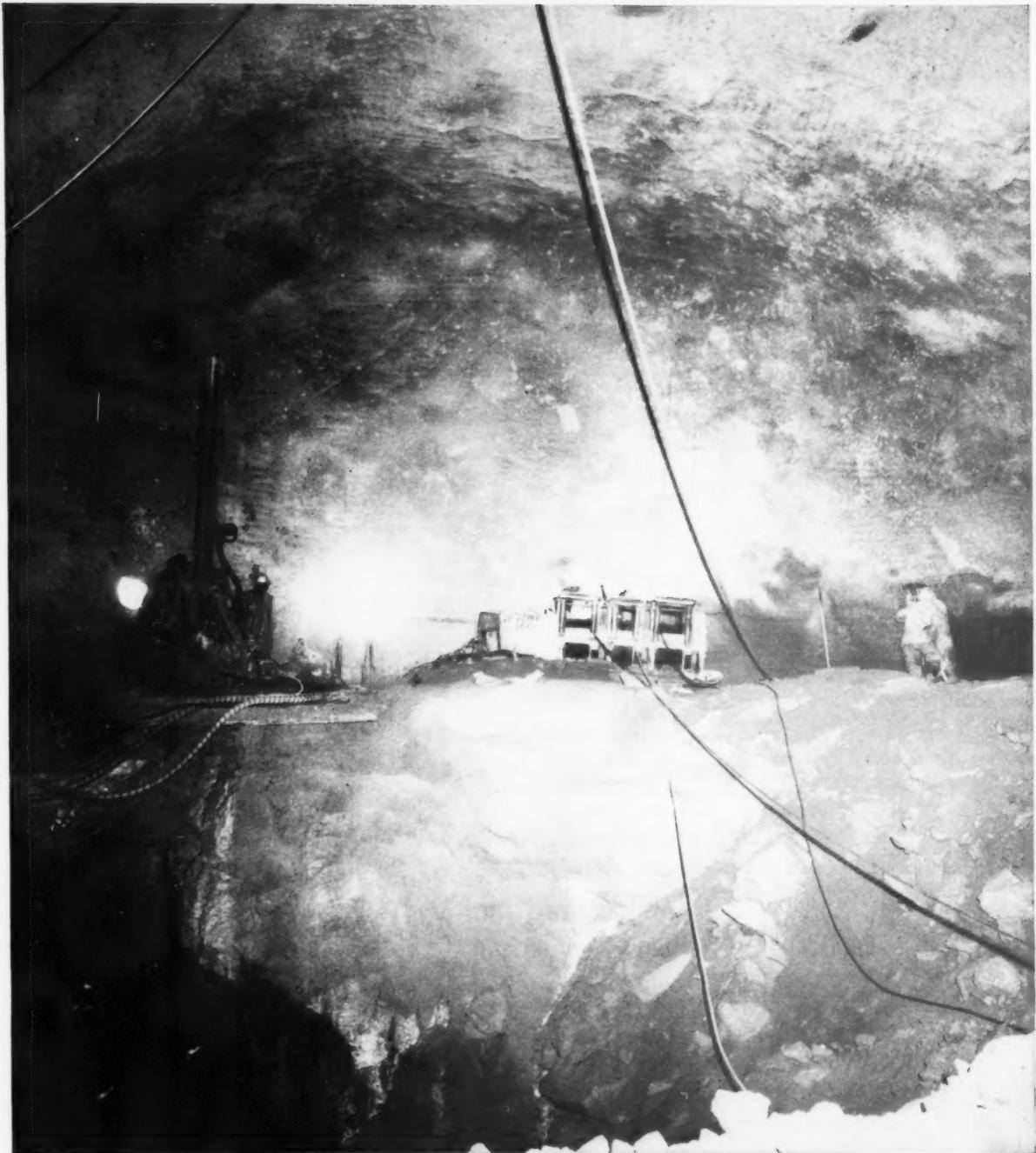
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WESTERN INDUSTRY — January 1958



**2000 feet inside a mountain,** P.G. and E. is building America's first major underground hydroelectric plant. This is part of the Kings River project that will mean an additional 261,500 kilowatts of electricity for growing California.

*Since 1946, P. G. and E. has invested nearly \$1 1/4 billion in new facilities. And to keep ahead of California's lightning growth, P. G. and E.'s expansion program is pushing forward at an average of nearly \$200 million a year. Business, homes and farms are thus assured a continuing supply of low cost gas and electricity . . . in the 47 California counties served by P. G. and E. • Pacific Gas and Electric Company*

*... for more details, circle No. 90 on Reader Service Postcard*

## New Handy & Harman Plant Under Way

EL MONTE, CALIF.—A plant with twice the capacity of the present facility, built in 1947, is under construction at 33 North Gibson Road by Handy & Harman, world's largest fabricators and refiners of precious metals. Operation of the factory is scheduled to start in February.

Comprising office, laboratory, refinery, operating area and warehouse, the plant will cover more than 23,000 sq. ft., and will offer the most complete and extensive precious metal refining and fabricating facilities west of Chicago. Products will include silver brazing alloys and fluxes for the manufacturing industries. Among the services will be processing to customers' requirements and the refinery reclamation of metals from scrap and waste.

The new plant will be under supervision of *H. A. Folger*, currently manager of the Los Angeles plant, 3625 Medford St., which will close when the new unit begins operation.

### Bergren Steel Corp. Is New Oakland Firm

OAKLAND—Bergren Steel Corp. is the name of a newly-organized firm of steel distributors that will specialize in steel plate and plate burning. The company will also handle Strongbarn roofing, galvanized corrugated sheet, expanded metal and steel grating.

According to *E. G. "Pete" Bergren*, president, the firm has installed a No. 56 oxygraph torch cutting machine with electronic tracer. Bergren, a 27-year veteran in the steel business, is a former president of the American Steel Warehouse Association.

### Goodrich Distributor

BURBANK, CALIF.—Ames Industrial Supply Co., 313 N. Victory Blvd., has been appointed one of seven regional distributors for the industrial cellular rubber products of B. F. Goodrich Sponge Products. Servicing the Western states, Ames will maintain stocks of sponge sheet, cord, tubing and strip, and is equipped to fabricate specialized products of die-cut sheet stock.

### Sunbeam Sales Rep

LOS ANGELES—Sunbeam Lighting Co. has appointed Chassaing Brothers-Lighting, Clayton, Mo., as sales representative for Colorado and several mid-West areas.

**OFFICIAL** medallion for the 100th anniversary of California's billion-dollar food canning industry in 1958 is displayed by *Lia di Leo*, Hollywood sculptor and actress, called in to appraise it from the women's angle. Created by sculptor-designer **Peter Ganine**, the medallion features a map of the state, a cornucopia of fruits and vegetables, plus stylized fish to symbolize the seafood industry. First official use of the medallion was on gift-packages of canned food sent to national and state officials from an industry kick-off banquet in San Francisco January 8. The artist was commissioned by the Canners League and American Can Co.



### Screw Machine Producers Set Up Western District

LOS ANGELES—A new district, covering California, Oregon and Washington, has been established by the National Screw Machine Products Association of Cleveland. According to *Francis P. Trinkaus* of Crelin Machine Co., Western screw machine product companies look toward eventual formation of two districts, for northern and southern sections of the area.

### Oregon Kraft Mill Begins Production

PORLAND—January 1 marked the beginning of production at the new \$22,500,000 kraft mill of the Georgia-Pacific Corp. at Toledo, Ore., according to *H. Stuart Daniels*, president. Wood chips made from sawmill leftovers are the raw material for the new plant, which started operation with a three-month supply of over 40,000 units of chips in storage.

Western sales agent for Georgia-Pacific paper products is the Cupples Co., 24 California St., San Francisco. Pierce Sales Co., Inc., and Reinhold-Gould, Inc., both of New York, will handle Eastern sales.

### \* Westinghouse Opens New Apparatus Unit in Compton, Calif.

COMPTON, CALIF.—A new apparatus office that will serve the aircraft, petroleum, marine, metal-working and electronics industries in this area has been opened by Westinghouse Electric Corp.

It offers sales, engineering and service facilities for electrical, steam and mechanical products made by the company's apparatus divisions, serving Orange and southern Los Angeles counties.

Located at 18020 Santa Fe Ave. the new facility is housed in a recently-completed Westinghouse manufacturing and repair plant, providing increased advantages for the firm's customers. The plant manufactures electrical switchboards, panelboards, industrial motor control and control centers.

*Carl W. Waldow* is manager of the new operation, which replaces facilities at 600 St. Paul Ave., Los Angeles.

### Portland Armour Expansion

PORLAND—A 40,000-sq. ft. tilt-up concrete meat refrigeration building is to be added to the Armour Co. plant at North Columbia Blvd. and Tyndall Ave. Total cost is estimated at \$300,000.

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WESTERN INDUSTRY — January 1958

## United Electrodynamics Opens Testing Lab

PASADENA, CALIF.—United Electrodynamics has announced opening of a new facility, the United Testing Laboratories, which is the first integrated electronic and mechanical testing laboratory in the West capable of conducting performance tests on inertial guidance systems for missiles and aircraft, as well as test programs on explosive and fusing systems.

Located at 573 Monterey Pass Road, Monterey Park, the facility covers 18,000 sq. ft., with 7,500 ft. for atmospheric controlled electronic laboratories and 10,500 sq. ft. for a general mechanical and environmental testing area.

Robert D. Fagaly, general manager, and D. L. Roelands, operating manager, head a staff of 70 engineers, technicians and office personnel.

### Propulsion Research in East

SANTA MONICA, CALIF.—An Eastern seaboard sales office in Washington, D. C., has been established by Propulsion Research Corp., 1860 Franklin St. A Curtiss-Wright Corp. subsidiary, the Santa Monica firm specializes in research and design of primary propulsion units and accessory equipment.

### C-Z Start-up in Louisiana

SAN FRANCISCO—Crown Zellerbach Corp. has started production at its \$4,000,000 multi-wall bag plant at Bogalusa, La. The 216,000-sq. ft. facility is adjacent to a kraft paper mill operated by Gaylor Container Corp., a division of Crown Zellerbach.

### Western Sales Rep Named

LOS ANGELES—The Lake Erie Machinery Corp., New York, manufacturer of a complete line of hydraulic presses and die casting machines, announces appointment of Archie J. Smith as the company's new Western representative. His offices will be located at 15618 Cossatot St., Van Nuys.



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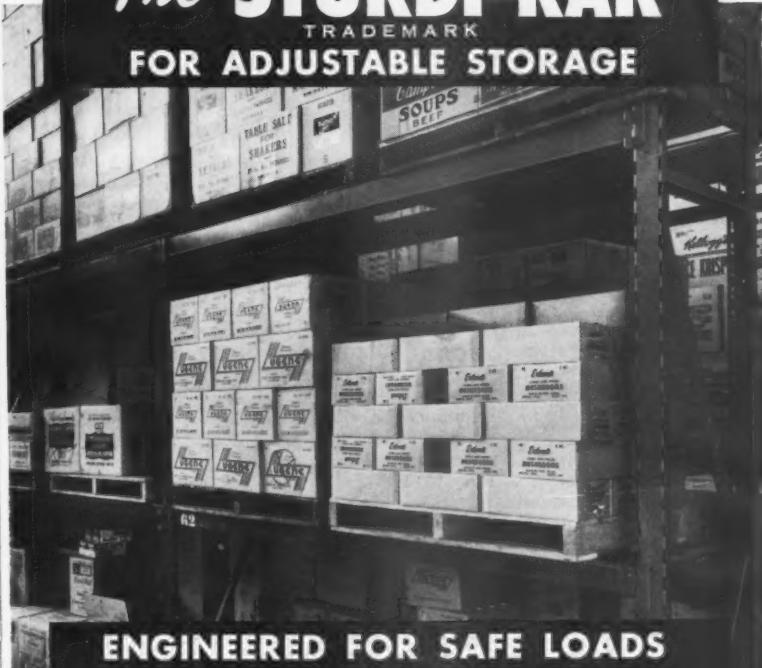
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WESTERN INDUSTRY — January 1958

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**WESTERN PACKAGING ASSOCIATION**—Board members and committee chairmen are pictured before a recent session in San Francisco. Standing (left to right): **Alexander Donald**, King Sales & Engineering Co.; **Kenneth O. Dean**, Good Packaging; **William H. Jaenick**, packaging consultant; **Joe B. Morningstar**, Paisley Products, Inc., of California; **Spencer Tilden**, The Arabol Mfg. Co.; **Arthur D. Campbell**, The Arabol Mfg. Co., and (seated) **Herbert King**, King Sales & Engineering Co.; **Alden Reed**, Nashua Corp.; **Peter L. Heguy**, association president, New Jersey Machine Corp.; **George N. Glendenning**, Food Machinery and Chemical Corp., and **Cliff Smith**, The William Crane Co.

## Electrical Communications Moves to Larger Plant

**SAN FRANCISCO**—Electrical Communications, Inc., electronic equipment firm, is in the process of moving its operations from 765 Clementina St. here to a larger plant at 555 Minnesota St.

The new plant will provide 10,000 sq. ft. of space for manufacturing, engineering and administrative offices. The 30-year-old company is the maker of Secode selectors used in communications, signaling and control applications.

## Lockheed-Navy Contract

**SUNNYVALE, CALIF.**—Lockheed Aircraft Corp. was awarded a \$3,000,000 contract by the Navy for construction of a Polaris development facility at the missile systems division plant here.

## Western Office for PIC

**VAN NUYS, CALIF.**—PIC Design Corp. of New York announces the establishment of a Western office. It will be located at 7335 Van Nuys Blvd. and managed by **John R. Smith**.

## Federal Pacific Test Facilities in Palo Alto

**PALO ALTO, CALIF.**—One of three new laboratories established by Federal Pacific Electric Co. is the research and development unit at Stanford University here. Medium and high voltage product performance is measured at test facilities that provide for multi-million volt stresses up to 1,050 kva. loads at surges of 25 kw/second.

A facility of some 10,000 sq. ft., the laboratory has a staff of 18 persons who came here last spring. Equipment rated up to 345 kv., 1,500 mva., is studied to provide analysis of such phenomenon as internal corona, transient voltage recovery rates and mechanical heating and dielectric factors as they affect oil circuit breakers, distribution transformers, disconnect switches and high voltage bushings.

## L. B. Foster Occupies Larger L. A. Office

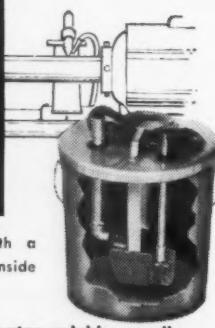
**LOS ANGELES**—New quarters in the Tishman Building, 3540 Wilshire Blvd., are giving the L. B. Foster Co. twice the space of its former office at 3460 Wilshire. A national supplier of construction materials, rail and pipe, Foster made the recent move because of expanding operations which have also doubled its sales force and other personnel.

Foster is a large supplier of rental steel sheet piling and maintains large stocks in various sizes and lengths at storage yards here, in Oakland and other cities. Aluminum bridge railing, rail for industrial railroad trackage and structural pipe are among the firm's other products.

## Jessup Is Representative

**LOS ANGELES**—Edgewater Steel Co., Pittsburgh, Pa., has announced appointment of Jessup Engineering Co., 8703 La Tijera Blvd., as Western sales representative. Jessup will handle sales of Edgewater's weldless and welded ring products.

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## Progress Award Given to Pacific Metals Co.

SAN FRANCISCO—For enhancing its area of the city, creating new employment through investment and for the confidence its leadership has shown in the future of San Francisco, Pacific Metals Co. Ltd. has been given the Award of Progress of the San Francisco Chamber of Commerce.

A leading distributor of non-ferrous and ferrous alloys, Pacific Metals in October opened its \$1,500,000 warehouse and office facility at 1900 Third St.

The firm handles fastenings, welding supplies and equipment. It has branch offices in San Diego and Phoenix, and warehouses and offices in Los Angeles and Salt Lake City.

## Sparling Meter Co. Completes Test Facility

EL MONTE, CALIF.—A new test facility was recently completed by Sparling Meter Co., to volumetrically test meters from the smallest capacity meters to the largest irrigation meters required for main canals.

The test laboratory can handle flows up to 35,000 gpm or 80 cu. ft. per second. Tests are made of meters up to 72 in. in size in the proper tube size and calibrated over the rated flow range, simulating performance conditions encountered in the field. Propellers for larger meters can also be calibrated.

## Renaud Moves to Pico

LOS ANGELES—Fred S. Renaud & Co. has moved to a new location, 4012 S. Durfee, Pico, Calif. Their former address was 8115 S. Western Ave., here.

## WedgeLock Distributor

LOS ANGELES—Pioneer Aluminum Inc. has been named world distributor to the aircraft industry for WedgeLock sheet metal fasteners and applicators, manufactured in North Hollywood. The distributorship was effective November 15. Pioneer is a subsidiary of Morris P. Kirk & Son, Inc., West Coast unit of National Lead Co.



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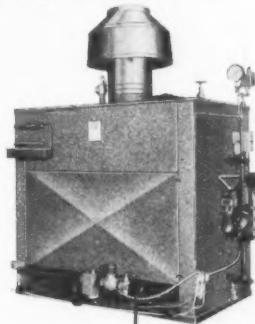
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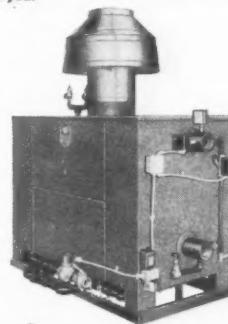
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AT RECENT INSTALLATION of Aircraft Electrical Society officers for 1958 are, left to right, J. Christie, treasurer, J. Andrew, secretary, Richard Summer, out-going president, Peter Duyan, Jr., new president, and A. A. Waldron, vice-president. Executive committee members are Ed Ryerson, Dick Barron, Nelson Harnois, Dick Hedges and R. Keeney.

## Convair Gets Contract for Plane Modification

SAN DIEGO, CALIF.—Convair Division of General Dynamics Corp. has been awarded a \$2,531,000 contract for modification of electronic systems in 131 supersonic F-102A all-weather jet interceptors for the Air Force.

The modernization work will be done at Convair's production flight facility at Palmdale, Calif. According to W. J. Martin, Palmdale manager, the new contract will enable Convair to maintain employment there at its present 2,500 level through the fall of 1958.

Basically, the modification program calls for updating of the aircraft's fire control systems to the latest configuration.

## Apex Bronze Co. Purchased

OAKLAND—Johnson Bronze of Pennsylvania has purchased the Apex Bronze Foundry Co. here. After a modernization program, the new subsidiary will provide delivery on plain cylindrical, flanged, self-aligning bronze bearings, and miscellaneous bronze castings within a reasonable size limit.

## Electronics Buildings Planned for Fullerton

FULLERTON, CALIF.—Plans are under way for the first of more than a half-dozen other electronic research buildings on the 20-acre site of the new American Laboratories plant, 1536 E. Rose Ave., according to William Grumet, division manager.

The first plant, which is now in production, contains \$150,000 worth of testing facilities and encompasses 11,000 sq. ft. Ultimately the company expects to have 400,000 to 500,000 sq. ft. under roof. Completion of the second building is scheduled in late 1958.

## California Grinding Works Bought by Wapakoneta

OAKLAND—Wapakoneta Machine Co. of Ohio, manufacturer of machine knives, has purchased controlling interest in the California Grinding Works here.

The California firm, which will be known as a subsidiary of Wapakoneta Machine, is a commercial grinder specializing in machine knives, press brake dies and all types of long, flat grinding. It will retain its present offices.

## \*Townsend Forms Research, Development Subsidiary

SANTA ANA, CALIF.—Townsend Engineered Products, Inc., is a research and development subsidiary recently created by the Townsend Co. for making complete studies in research, concept, design, development, modification and testing in specialized, advanced scientific fields.

It will also offer complete manufacturing facilities for prototypes and production, according to Edmond B. Buster, Townsend's West Coast vice president. Operating in a new 30,000-sq. ft. building near Townsend's Cherry Rivet division here, TEP is headed by Cmdr. G. O. Noville, with Robert H. Aaron, Samuel L. Sola and Charles F. Schultz in other key positions.

TEP's broad fields will be equipment and components for the aircraft, automotive, petroleum, ordnance, transportation and armament industries, plus studies involving special metals, combat vehicles and human engineering.

## Container Corporation Opens \$6,000,000 Paper Mill

SANTA CLARA, CALIF.—First fully integrated paper mill and folding carton facility of the California division of Container Corporation of America was opened in December on a 48-acre site here. A \$6,000,000 mill, it has an operating area of 132,000 sq. ft., a capacity of 150 tons daily, and represents one of the industry's most completely automated combination linerboard and boxboard mills.

The structure is architecturally harmonious with the company's neighboring three-year-old folding carton plant which it supplies with folding boxboard. General manager of the facility is William H. Richards, who is also Western division general manager. Plant manager is Fred P. Ritchie.



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**ELECTRICAL TAPE**  
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**HOWARD**  
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**COMPANY**

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## Ordnance Men Hear How Sputnik Affects Industry

SAN FRANCISCO—"Western research and industry can help America's scientific advancement by giving immediate attention to improving their ability to respond quickly to new developments," said *E. Finley Carter*, director of Stanford Research Institute, Palo Alto, Calif., at the recent annual luncheon meeting of the American Ordnance Association, San Francisco Post.

Carter emphasized that the Russian launches have given us the opportunity to expand our knowledge of outer space and have provided an occasion for a review and evaluation of our own scientific research effort.

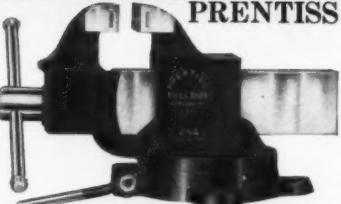
"There must be more quick-reaction facilities, and shorter lead-time from research to operational systems," he added.

The association was told that operations research analysis and evaluation are already used as the basis for decision-making in many segments of Western industry. "Further extension of these techniques in defense planning can result in more effective use of our scientific and human resources, elimination of waste motion, and employment of our energies on priority programs," Carter concluded.

### Warehouse Companies Organize New System

SEATTLE—The Taylor-Edwards Warehouse & Transfer Co. has joined 21 other warehouse companies to form a new coast-to-coast organization, according to *D. E. Taylor*, president of the Seattle company.

To be known as the National Warehouse Receipts System, it will offer nationwide field warehousing service from 37 major cities. Operations will be administered from five regional offices located at San Francisco, New York, Chicago, Atlanta and Dallas. Home office is at Phoenix, Ariz.



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...for more details, circle No. 100

WESTERN INDUSTRY — January 1958

### English Firm Will Make CEC Recording Equipment

PASADENA, CALIF.—The Solarton Electronic Group, Ltd., of Surrey, England, will manufacture and market equipment of Consolidated Electrodynamics Corp., according to an agreement signed by the two concerns recently. Products involved are magnetic-tape recording and reproduction equipment for use in aviation research and development, and in missile and aircraft flight trials. Solarton has been CEC's sales representative since June 1955.

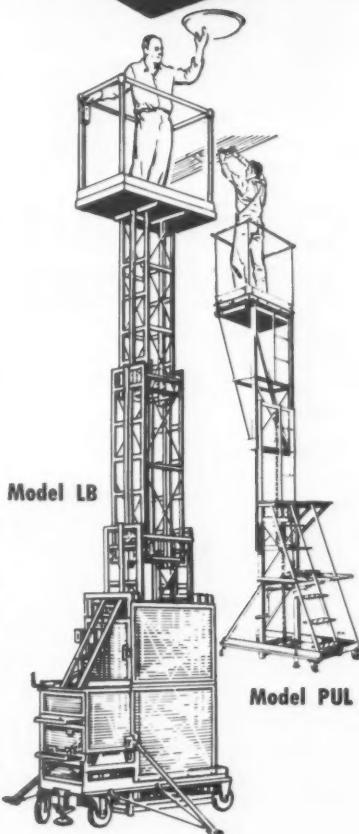
### U. S. Plywood Buys Tacoma Warehouse

TACOMA—The sales warehouse of Plywood, Inc., subsidiary of Atlas Plywood Corp., has been purchased by United States Plywood Corp., according to an announcement by *Monroe W. Pollack*, USP sales vice president.

The Tacoma purchase is the fourth new distribution center opened by USP recently, bringing to 109 its total number of branches in the United States and Canada.

Located at 540 E. 15th St., the Tacoma branch will be under the management of *R. L. Heustis*, Seattle branch manager.

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Portland 1, Oregon

Plant Equipment Co. Home Office: 4510  
Denver, Colo. W. Lake St., Chicago 24, Ill.

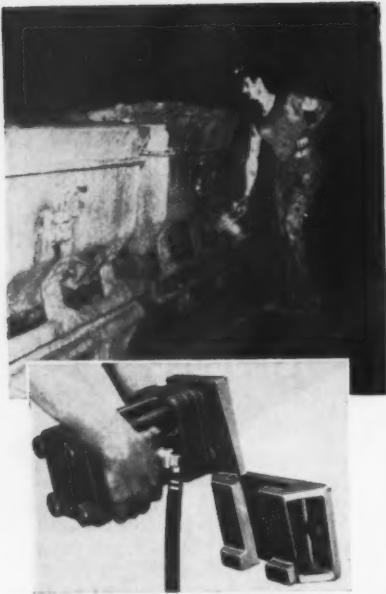


**P·I·E**  
PACIFIC INTERMOUNTAIN EXPRESS

...for more details, circle No. 101

**ECONOMY**  
**ENGINEERING**

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...for more details, circle No. 103

## Ramo-Wooldridge Creates Space Technology Labs

LOS ANGELES—Establishment of the Space Technology Laboratories as an autonomous operating division of Ramo-Wooldridge Corp. has been announced by *Dean E. Wooldridge*, president.

The new division is an outgrowth and extension of the former guided missile research division, a unit of the company responsible for the technical direction and systems engineering for the Air Force Atlas, Titan and Thor missiles.

The laboratories will have their own completely separate personnel, facilities and services, according to Dr. Wooldridge.

### Fluor Division to Handle German Conveyor Line

WHITTIER, CALIF.—Fluor Products Co. has signed an exclusive agreement with Maschinenfabrik Hartman A. G., Offenbach, Germany, to design, manufacture and sell the German firm's complete line of heavy duty industrial pneumatic and mechanical conveying systems, ash handling systems, dust removal and classifying systems.

In line with the agreement, Fluor has established a new division, Fluor-Hartman, headed by *James Elizardi*, formerly vice president of the mid-continent sales area.



RECOLVATOR CO.  
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...for more details, circle No. 104

## Eutectic Open House Marks Opening of New Center

LOS ANGELES—Lectures by top welding technicians, movies, live demonstrations of latest welding methods, welding technology literature, souvenirs and door prizes were features of the three-day open house held in December by Eutectic Welding Alloys Co.

The event marked official opening of Eutectic's new warehouse and service center at 5348 Jillson St., and was designed to familiarize industry in the area with the laboratory, school and consultation services which the center will provide. Complete service, testing, warehousing and shipping space is included in the facility.

### Moto-Bug Distributor

OAKLAND—Industrial and Foundry Supply Co., Inc. of California, 2500 Union St., has been appointed distributor of the Moto-Bug, a power material handling unit interchangeable as a forklift, hopper or platform carrier, which is made by Kwik-Mix, a division of Koehring Co. Territory of the new distributor includes Fresno, Monterey and Mono counties, and areas of the state north of them.

## Shell Begins \$500,000 Process Development Lab

SAN FRANCISCO—Shell Development Co. has announced start of construction for a \$500,000 process development laboratory at its Emeryville, Calif., research center. Scheduled for completion next spring, the lab will be a three-story structure covering some 10,000 sq. ft. of ground space. It is designed to provide a "test tube-to-manufacturing plant" stepping stone during development of new petroleum products and petrochemicals.

YALE



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...for more details, circle No. 105

WESTERN INDUSTRY — January 1958

## Canoga Expansion Will Up Production Capacity 50%

VAN NUYS, CALIF.—Canoga Corp. has announced completion of construction at its 5955 Sepulveda Blvd. plant that will increase production capacity by 50% and greatly enlarge areas for engineering, business and management personnel.

Plant improvements border the present microwave antenna pattern range operated by Canoga, which is heavily engaged in research, development and manufacturing in fields of radar systems, guided missile range instrumentation, electronic test equipment, missile launching and control, microwave components, transmitters and receivers.

## Two Parker Distributors in California, New Mexico

HAYWARD, CALIF.—Appointment of Robert B. Porter Co., Hayward Municipal Airport, as a distributor of Parker synthetic rubber O-ring seals is announced by D. A. Cameron, general sales manager of Parker-Hannifin Corp., Cleveland, Ohio. At the same time, Cameron announced the granting of a distributorship on Parker tube fittings to Snyder Co., Inc., 1903 East Mojave St., Farmington, N. Mex.

### Potentiometer Supplier

SAN MARINO, CALIF.—To provide an immediate source of supply to users of Helipot potentiometers in the Western states, G. S. Marshall Co., electronic manufacturer's representative of San Marino, now maintains a large stock of standard Helipot models. Service to other areas in the West is expedited through Marshall branches in Redwood City and San Diego, Calif., and Tucson, Ariz.

### Freightways Terminal

REDWOOD CITY, CALIF.—For better service to the industrially growing Peninsula area, Consolidated Freightways has opened a terminal at 955 Charter St. Frank Davies, a former Oakland sales representative, is manager.

WHITNEY



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...for more details, circle No. 106

WESTERN INDUSTRY — January 1958

## Small Particles in Smog Is Conference Subject

SAN FRANCISCO—First nationwide conference on the role of "small particles" in air pollution—waste elements which are invisible to the naked eye yet contribute heavily to smog—was held here recently at the Fairmont Hotel. Over 200 attended the two-day meeting sponsored by the National Air Pollution Control Association. Benjamin Lingsky, Bay Area Pollution Control Officer, was chairman of the conference, which featured 18 technical papers, panel discussions and luncheon addresses.

## \* Adam-Hill to Represent Jeffrey in Bay Area

SOUTH SAN FRANCISCO—The Adam-Hill Co., which has three stores in the Bay Area, has been appointed distributor for products of the Jeffrey Manufacturing Co., Columbus, O. Adam-Hill recently moved to new headquarters at Utah Avenue and Corey Way, where there are enlarged facilities.

The new distributor also has stores at 7501 San Leandro St., Oakland and at 737 Stockton Ave., San Jose, plus a warehouse at 1862 Rollins Road, Burlingame.

Jeffrey is also represented by the Bearings Engineering Co., San Francisco and Oakland.

## Babcock-Wilcox to Build 'Once-Through' Generator

HUNTINGTON BEACH, CALIF.—The Babcock & Wilcox Co. has been awarded a contract by Southern California Edison Co. to build a "once-through" type of steam generator designed for operation with variable pressure.

The steam generator, known as a "Universal Pressure" unit, will provide 1,638,000 lb. of steam per hour to the throttle of a 200,000 kw. turbine at a pressure of 2,400 lb. psi. and a temperature of 1,050 deg. F., and will reheat the steam to 1,000 deg. F. Completion of the unit is scheduled for March 1960.

## Portland Men Purchase California Plating Works

PORLAND—The California Plating Works, with its subsidiary, Northwest Bumper Exchange, has been purchased by Addison B. Wood and Peter C. Cartwright. Wood has assumed the presidency and active management. Cartwright will not participate actively in the operation.

The plating works has facilities for industrial, decorative and automobile bumper electro-plating and is said to be the largest plant of its kind in Portland.

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114

## Pacific Scientific Co. Starts New Building

SAN FRANCISCO—Construction is under way at Harrison and Third Sts. for a modern two-story building for Pacific Scientific Co. Slated for completion in March it will serve as headquarters for the firm in the Bay Area.

The company's furnace division manufactures industrial heat treating equipment and its aero division produces aircraft control equipment. Offices are maintained in principal Western cities, with plants in Los Angeles and Anaheim, Calif.

## New Fleet for Ringsby in Bay Area

SAN FRANCISCO—An all-new fleet of pickup and delivery trucks and trailers has been placed in service by Ringsby Truck Lines, Inc., in the metropolitan Oakland-San Francisco Bay area. *Fred Barrett*, district manager here, has announced.

The units, 100% radio-equipped for two-way operation, will serve a radial area of approximately 75 miles from Ringsby's Emeryville terminal, including the peninsular area between Oakland and San Jose.

## Canco Expansion in 1957

SAN FRANCISCO—Total physical expansion facilities of American Can Co. facilities in 1957 totaled some 1,500,000 sq. ft., including two coil facility locations at Oakland and Los Angeles, according to *R. C. Stolk*, West Coast vice-president. New construction accounted for a substantial part of Canco's capital expenditure for the year, which was approximately \$52,000,000.

## Young Changes Name

LOS ANGELES—Young Spring & Wire Corp. is the new corporate name for L. A. Young Spring & Wire Corp., supplier of springs, frames, and diversified wire products to the automotive industry. The firm also manufactures material handling and roadbuilding equipment, aircraft and missile parts and electronic communications equipment.

## WHITMAN & BARNES



### DRILLS



...for more details, circle No. 110

## California Magnetic Control Forms New Department

NORTH HOLLYWOOD—California Magnetic Control Corp. has formed a new department to design and manufacture magnetic amplifier systems for controlling stage lighting in theaters, auditoriums and television studios, *M. B. Leskin*, president, announced. The systems are produced by the company in all sizes ranging up to 300 ampere, three-phase per circuit.

## Grand Central Rocket Co. Announces Expansions

REDLANDS, CALIF.—Grand Central Rocket Co. has announced that plant expansions totaling \$1,000,000 are either under way or nearing completion at its various facilities.

The company is the developer of the Vanguard satellite launching rocket and the high-altitude stages of the Air Force's outer space "Operations Far Side," according to *C. E. Bartley*, president.

Among the new facilities are two static test bays, a 20,000-sq. ft. tooling and rocket assembly building, an administrative building wing and a propellant-mixing building.

## Datran Electronics Gets New Plant Facility

MANHATTAN BEACH, CALIF.—Datran Electronics, division of Mid-Continent Manufacturing, Inc., has moved into new quarters at 1836 Rosecrans Ave.

The new facility quarters the sales, engineering, assembly and quality control departments. Datran is currently expanding its prime and subcontract activities in the fabrication of electronic sub-assemblies and electro-mechanical devices.

Datran will continue production of machine parts and other service functions at its plant at 3615 Aviation Blvd.

## Western Warehouse Proves Success for White Motors

LOS ANGELES—Successful operation of a Western parts warehouse for the White Motor Co. during the last 14 months may result in establishment of similar units for other parts of the country, the firm has announced.

Expansion of the "regional parts warehouse" concept is being considered by White executives because of the overwhelming approval of the West Coast project by truck operators and the White dealer-distributor organization. Established in August 1956, as a source of "slow-moving parts," the warehouse is now a 20,000-sq. ft. parts depot that provides access to more than 6,800 different parts, including complete truck components such as truck axles and complete cab replacements.

## WESTERNERS AT WORK . . .

### Earle M. Jorgensen Co.

... appoints *Earl "Bud" Leas* as Western tool steel product manager. Leas was formerly vice president in charge of sales for Cook Heat Treating Co. in Los Angeles for 16 years, and also has served as sales manager of Vanadium Pacific Steel Co. His primary function will be to provide technical assistance to tool steel users served by Jorgensen's plants at Los Angeles, Oakland and San Francisco.

### American Blower Division, American Radiator & Standard Sanitary Corp.



Orrin Freer

... announces appointment of *Orrin Freer* as manager of the division's operations at San Leandro, Calif., replacing *R. A. Lee*. Freer has been with the division since 1941 and was manager of the Dearborn, Mich., plant prior to his transfer.

### Dalmo Victor Co.

... assigns *Fred H. Angier* to be sales manager of its recently formed Hydraulics division, with responsibility for field sales, contract administration and promotion of electro-hydraulic servo-valves and other hydraulic products. Angier joined the firm in June 1956, and has been assistant sales manager for the eastern region, headquartered in Washington, D. C. He was formerly associated with General Controls Co. and with Davison Chemical Corp.

### Yale Materials Handling Division, The Yale & Towne Mfg. Co.

... appoints *George C. Lichty* as Northwestern district sales manager for Yale lift trucks. Lichty, active in all phases of industrial lift truck sales and service for more than 15 years, will be in charge of Yale representative activities in Oregon, Washington, Idaho, Montana, as well as Vancouver, British Columbia and Alberta, Canada.

### Hoffman Electronics Corp., Radio-TV Division

... has promoted *Fred J. Vogt* to be the division's production manager, supervising all production of television receivers, radios and high-fidelity sets in the firm's plants in Los Angeles. Previously general foreman of chassis and sub-assembly in the division, Vogt has been with Hoffman since 1955. He has also been associated with Electrometric, Inc., Majestic Radio and Television, and with Zenith Radio.

### Standard Oil Co. of California

... announces several key personnel changes in Southern California, Utah and Alaska. These include *W. H. Cochems* who has been promoted to production superintendent at Murphy-Coyote, succeeding *C. N. Beyrle* who is retiring. In Alaska, *J. T. Crooker* has been named district superintendent, with headquarters at Anchorage. He will be joined there by *R. L. Beckwith*, who will handle general engineering matters for Alaska operations. Other Alaska assignments include that of *W. E. Whitney*, engi-

# CLASSIFIED SECTION

Space is sold as advertisers' inches. All advertisements in this section are  $\frac{1}{8}$  inch short of contracted space to allow for borders and composition. Rates are \$15.50 a column inch. Copy should be sent in by the 25th of preceding month if proofs are required; by the 28th if no proofs are required.

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### Pack River Tree Farm Products

... announces *Thomas S. Porter*, Spokane, the firm's general sales manager, as the successor to *W. F. Stewart*, vice president in charge of sales, who retired Jan. 1.

### Mail-Well Envelope Co.

... has appointed *L. W. Lord* its new Spokane area sales manager to succeed *Harry Meadors* who has been promoted to a post in the company's main office in Portland.

### Square D Co.

... selects *Dan Miller* as its new Western division manager, according to *Gordon Patterson*, president of the electrical distribution and control equipment firm. Miller, a 22-year veteran with Square D, will make his executive office at the Los Angeles plant, and will be in charge of plant operations at Los Angeles, Seattle, San Francisco and Denver. He has been Northwest regional manager for the past five years at Seattle.



C. D. Ramsden

### Reliance Steel & Aluminum Co. and Reliance Magnesium

... elect *William T. Gimbel* president of these Los Angeles distributors of steel, aluminum and magnesium. Gimbel joined the organization ten years ago and for the past three years has served as executive vice president and active head of the companies.

### Pacific Intermountain Express

... appoints *H. L. Etheridge* as Pacific region sales manager. Formerly district sales manager at Los Angeles, Etheridge will be headquartered at Oakland where he will head staff sales activities of the region, which includes five districts: Los Angeles, Oakland-San Francisco, Portland, Seattle and Spokane.

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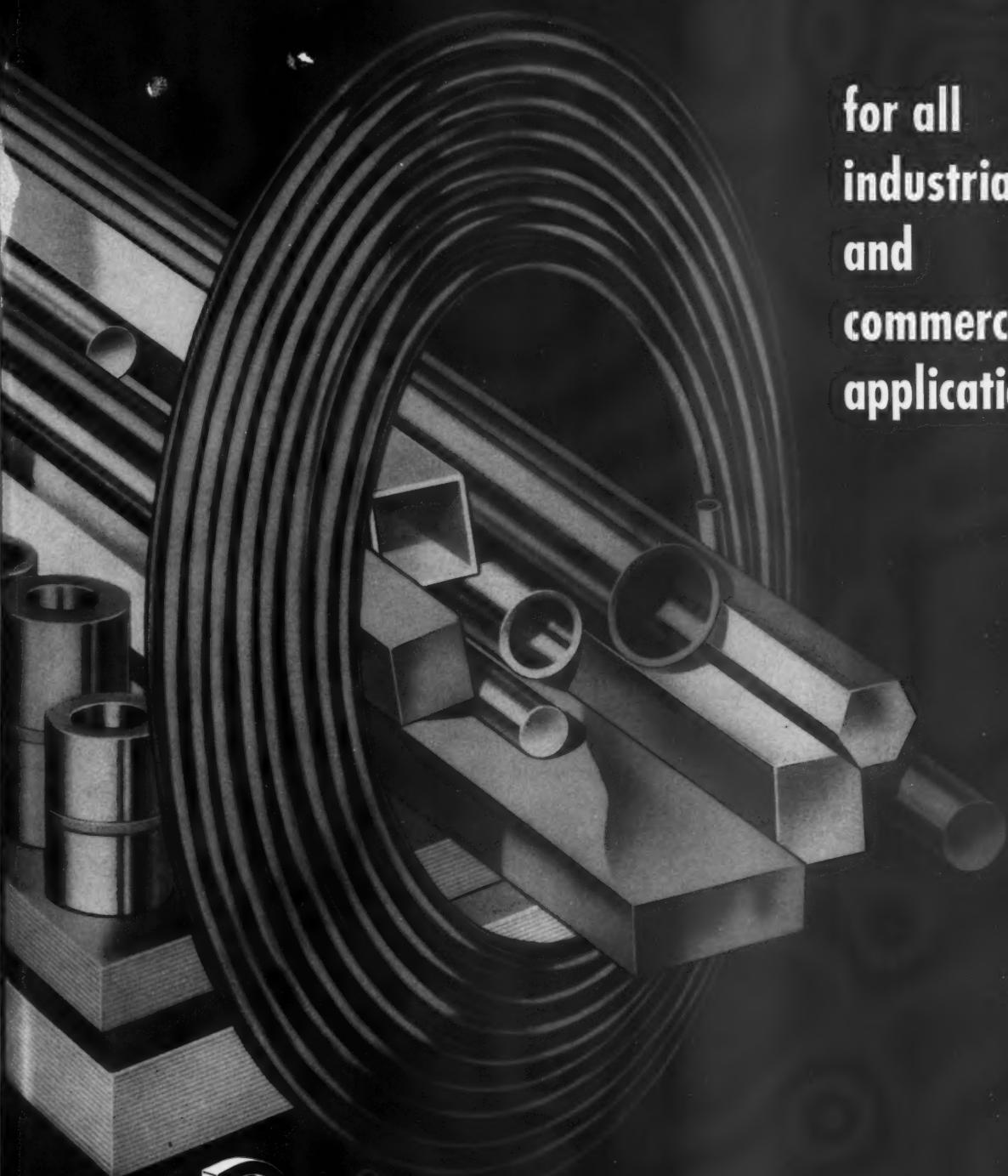
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WESTERN INDUSTRY — January 1958

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## Los Angeles Plant - Strip Steel Division

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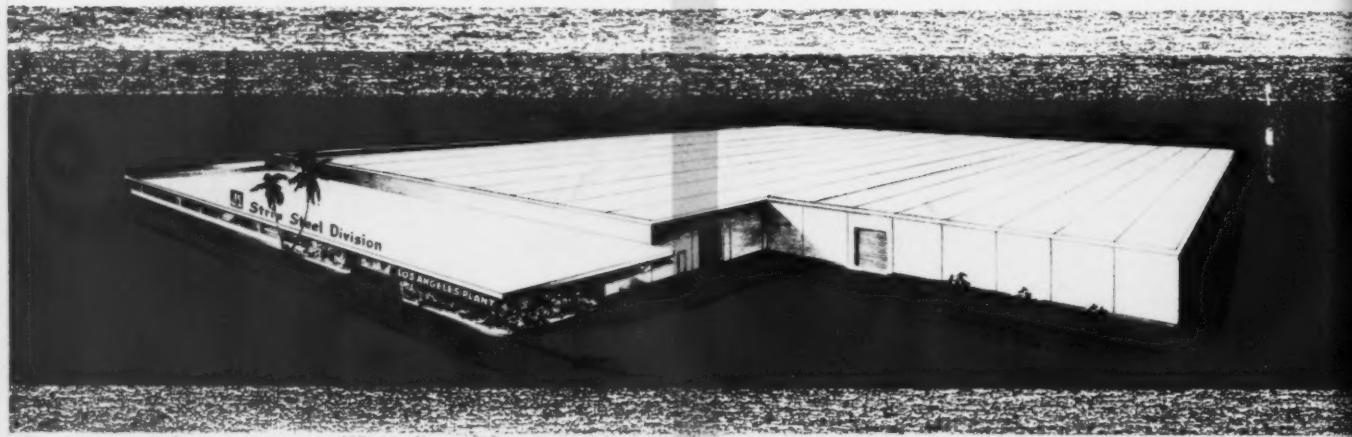


### Warehouse Division

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### Mill Division

The J & L Strip Steel Division, Los Angeles Plant, is the first in the West to provide a local mill source of supply for high carbon spring steel, alloy and other Restricted Specification flat rolled products. It's one of four J & L strip steel producing plants all using similar equipment to provide the precision and quality so long identified with this organization. Your inquiries are invited—write or phone today.



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## LOS ANGELES PLANT

### Jones & Laughlin

STEEL CORPORATION

### STRIP STEEL DIVISION

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